Standards and quality assessment in general dental practice.

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STANDARDS AND QUALITY ASSESSMENT IN GENERAL DENTAL PRACTICE

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A report submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy in the Faculty of Medicine, University of London.

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November 1995

ACKNOWLEDGEMENTS

Sincere thanks to the following, without their help this study would not have been possible.

PROFESSOR STANLEY GELBIER
(Supervisor)

KATHRYN THOMAS RDSA, Dip. DHE.,
CHRISTOPHER MARSHALL BA (Lond.)
(Research Assistants)

PMT/ORTHOMAX
(Sponsorship of mailing costs)

ABSTRACT

A method for comparative quality assessment is tested in different modalities of General Dental Practice (private practice, mixed practice and NHS General Dental Services practice) in the London area. Overall standards of oral health care are assessed , examined and compared.

The background and development of an appropriate assessment strategy for general dental practice, the co-operation and otherwise, of practice principals and the results obtained by the evaluation of different types of practices. , by interviews and questionnaires, detailed review of patients' records, radiographs, and observation of dentists carrying out actual treatments is described. The outcome of the treatment process and patients' attitudes to the practice in which their dental care is received is assessed by patient interview and/or a personal questionnaire.
112 practices and 190 dentists were utilised in this mixed qualitative and quantitative study. The scores based on elements of structure, process and outcome of the delivery of care for the entire project sample and those of the sub-sample practising in private , mixed , and NHS practice were analysed and showed that:

- It was possible to derive an assessment instrument suitable for assessing standards in general dental practice.

- It was feasible and practical to assess quality standards in general dental practice using the protocols and assessment method developed in this study.

- Differentials in standards exist between the various modalities of practice (NHS, Mixed and Private) .

The project and its results are discussed and conclusions drawn. Recommendations and suggestions are made on the possible pathways for further investigation .

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INTRODUCTION

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Many dentists in general dental practice in Great Britain both within and without the NHS at the time of this study have yet to achieve even the fundamentals of general acceptance of the principals of quality assurance, and many perceive any process of assessment as threatening rather than educational (Wood 1991)

The profession is also undermined by the absence of any sort of consensus for standards in relation to most therapeutic intervention, diagnostic procedures and materials. During 1991 a Department of Health initiative resulted in the production of a manual of standards by the Royal College of Surgeons which laid down suggested guidelines for general dental practice. This work has in the main met with outrage from NHS based practitioners. There is no doubt however that it is reasonable and correct to expect that care providers i.e. dentists and their teams, engaged in whatever form of general dental practice, and however funded whether by third party or directly by the patient, should be involved in continuing quality assurance protocols.

This study was therefore set up to investigate and provide information on:

- The feasibility and effectiveness of the means utilised to assess areas of the delivery of care in General Dental Practice that are important to quality assurance

- The problems encountered in implementing practice visits and observing dentists at work treating their patients

- The actual day to day standards existing in various types of dental practices delivering care under different systems and philosophies.

If effective quality assurance is to be an accepted part of General Dental Practice then these questions need answers. In Chapter 2 the literature review will form the background to this project and the aims for a study which will provide contemporary information on the above are set out. Chapter 3 describes the project method. Chapter 4 presents the results obtained, whilst Chapter 5 discusses these results. Chapter 6 develops some conclusions and recommendations.

Chapter 2

LITERATURE REVIEW

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Most dentists in the UK who have been in practice for more than ten years have found themselves in recent times having to grasp the meanings of a new vocabulary that was never mentioned or relevant whilst at dental school. Quality Assessment, Quality Assurance, Peer Review, Audit, and so on, all confront dentists regularly through the media of journals, articles, correspondence columns, and dental meetings. Does any of this have a lasting significance for the dentist in general practice, or is it a passing phenomenon soon to fade away? What do these terms mean?

2.1. The meaning of Quality

First, what is quality? There is difficulty in approaching a general definition as this will vary according to the perspective and interest from which the concept of quality is viewed. Roberts and Provost (1987) described them as follows:

Interested Party	High priority elements
Consumer (Patient)	Responsiveness to personal care needs. A level of communication, concern and courtesy. Degree of symptom relief. Level of functional improvement
Practitioner	Degree to which care meets current 'best practice'. Clinical freedom to act in patients' best interest.

Purchasers/Providers	Efficient use of the funding available for healthcare. Appropriate use of resources. Maximum contribution of health care to contain loss of productivity.

Plamping and Freed (1990) defined Quality Dental Care :

1. To achieve for that individual's requirements a functioning aesthetic and healthy dentition consistent with and contributing to his/her mental, physical and cultural wellbeing.
2. As occurring when the dental practitioner provides a service to a high technical and clinical standard when measured against the current standard of knowledge and accepted good practice. The practitioners actions must be to the benefit of the patient and take into account the knowledge and aspirations of the patient. The practitioner must ensure that the resulting mutually agreed actions do not damage the general wellbeing of the patient.
3. The evaluation of the performance of dental practitioners according to the degree to which the structure and process of care increases the probability of outcomes desired by patients and reduces the probability of undesirable outcomes, given the state of dental knowledge. Which elements of patient outcomes predominate will depend on the condition of the patient."

Secondly, some broad definitions of the terms most in use today are needed. Quality assessment, which precedes quality assurance, was defined by Pollitt (1993) as "the measurement of, or judgment about, the quality of delivery of care" and Quality assurance as "the implementation of necessary changes to either improve or maintain the quality of care rendered" .

Audit is a term that probably originated in general usage in regard to finance and accounting where an accountant would "audit" prepared company or business accounts for correctness. When audit is used in relation to oral health care it should mean rather more than a survey of technical and procedural correctness. The Working Group on Audit in Primary Dental Care of the British Dental Association and the Faculty of General Dental Practitioners (1991) set out a definition of audit that had been modified appropriately from a previous definition used in medical care

and was that " Clinical audit in primary dental care may be defined as the systematic critical analysis of the quality of dental care including the procedures used for diagnosis and treatment, the use of resources, and the resulting outcome and quality of life for the patient" Audit in the NHS prior to the 1989 white paper was virtually non-existent apart from projects carried out by local consultants with enthusiasms in that direction.

Peer review is a much used term and often misunderstood concept. It should accurately convey a sense of evaluation by equals such as already may be reasonably argued to exist in dental group practice. Similarly, for researchers and academics the introduction of new information is rigorously "peer reviewed" through the medium of refereed journals, a well established and time honoured protocol. The General Dental Services Committee of the British Dental Association (1991) said that in NHS general dental practice, peer review has the objectives of "encouraging initiatives which examine ways in which dentists can improve further the service to their patients" and also to "test the effectiveness of different types of review" The American Fund for Dental Health National Dental Quality Assurance Advisory Committee (1980) considered peer review as " formal assessment by dental professionals of the quality of dental services performed" and " a professionally sponsored and operated system for the rendering of professional judgment on disagreements between or among dentists, patients, or fiscal intermediaries respecting quality of care and related matters" Probably the most succinct of all definitions was the American Dental Association Peer Review Procedure Manual (1975) " a mechanism by which the dental profession demonstrates the appropriateness and quality of the care it renders"

2.2. A historical perspective

Measurement then is is a necessary prerequisite of quality control. Smith (1923) , wrote: "The expression of measurement in a number language employs a skill that can be traced back to primitive man and it has even been argued that mathematical concepts such as form, number and measure could have been recognised by lower animal forms and did not have to await the coming of the human race."

Sydenham,(1979) stated: "The process of comparing an unknown against a standard unit having a divided scale was certainly in use among later Stone Age

peoples."

McCreary, (1976) noted that the code of law of Hammurabi, King of Babylonia, (c1800BC), demonstrated evidence of strict quality control of quality in an advanced civilisation. Many quality control procedures were in evidence in disciplines other than medicine therefore at a very early stage.

Khan and Hashim (1983) in a historical survey of quality standards and their development noted the uniformity of units of weights and measures and refer to the eleventh-century Guild Act in England by which the wardens of the crafts were appointed "to see the work to be good and right." Statutes defining length and area which were introduced in the reign of Edward I (1239- 1307) were also described.

Drew (1972) described quality assurance measures relating to defence and related how in Saxon times officials were empowered to protect purchasers from unscrupulous traders. "Standards of weights were introduced first when Mercia was the chief principality of the kingdom" .

Armytage(1976) in *A Social History of Engineering* related the earliest recorded example to establish the principle of interchangeable parts for quality control to be the invention of printing from movable type. "It was one of the main events separating the Renaissance from the Middle Ages." This process is believed to have been perfected by Johannes Gutenberg of Mainz. *The Gutenberg Bible*, issued in 1454, was the first book to be printed in this way.

Syrett (1966) described how in a *Report on Manufacturers* presented to the United States House of Representatives in 1791 by the Secretary of the Treasury, Alexander Hamilton discussed "judicious regulations for the inspection of manufactured commodities." .

Jones (1985) described a British document of 1786 dealing with the quality of iron ordnance. He used the words "proof or examination"rather than "inspection" and set out the grounds on which the Inspector of Artillery "shall and may reject such ordnance".

Durfee(1972), referred to a letter from Jefferson in France in 1785 where he draws

the attention of the American Congress to the manufacturers of muskets in Versailles: "in the making of every part so exactly alike, that what belongs to anyone may be used for every other musket in the magazine". In 1799 Eli Whitney produced 10, 000 muskets for the United States Army using jigs to enable unskilled workers to make accurate interchangeable parts in large quantities at low cost.

The First World War stimulated mass production. The need for industrial inspection was recognised and in Britain the Technical Inspection Association was formed in 1919. It became the Institution of Engineering Inspection in 1922. (precursor of the present-day Institute of Quality Assurance).

In America the evolution of automatic dialling forced the use of quality control in telephone manufacture. Shewhart invented the control chart in 1924 and Dodge began the development of statistically based acceptance sampling plans. In Britain, Dudding applied statistical methods in electrical manufacturing.

Shewart in America wrote the world's first book on quality control in 1931 and in Britain Tippett wrote in that same year a book on statistical method. Pearson(1935) stated that shortly afterwards the Industrial and Agricultural Section of the Royal Statistical Society was formed and also the British Standards Institute (BSI) published their first standard on quality control.

Barnard and Plackett (1985) described how the SR17 Statistical Advisory Unit of the Ministry of Supply was established in 1945 and provided an important contribution to the industrial war effort.

In 1946 a thousand quality control specialists formed the American Society for Quality Control. Today this society with a membership of over 48 000 individuals from every state now promotes events of national economic importance such as the National Quality Month and the Fortune Quality Forum attended by chief executives of major US companies. The society's monthly periodical Quality Progress frequently carries review papers dealing with quality matters in many countries. Many top industrial executives were dismissed immediately after the war and their successors were promoted from operational areas, with experience of production and marketing. The new top executives were given training at American management seminars.

Kitegawa (1984) described how in Japan quality circles were set up in 1962 when quality assurance had already been established and it was recognised something had to be done to bring the foremen and supervisors into the process. The American seminars devoted more time to quality control than to any other topic. The Japanese later took over the system of these seminars and by 1974 over 5,100 top executives had been trained this way. The Japanese have incorporated their own interpretations of quality control after consideration of Western techniques. Their contributions include quality circles, fishbone cause -and-effect diagrams, parts per million philosophy, company-wide quality assurance and Taguchi methods.

The British approach to quality over the last sixty years has been feeble in comparison with the Americans and Japanese. Van Rest and Barnett (1953) related how in the decade after the war a study visit team of the Anglo-American Council on Productivity said on their return from America, "there was not the same enthusiasm for quality control in Britain as was evident in America". In America, Feigenbaum(1956) identified three major areas of quality control - appraisal costs, production costs and management costs

In 1957, Britain became a founder member of the European Organisation for Quality Control and in 1961, the National Council for Quality and Reliability (NCQR) was formed as part of the British Productivity Council. Pearson (1967) wrote, " Looking back I am sure that we in Britain hoped for a more rapid approach to the millennium than was in fact to be achieved We had not this backing of experience which could quickly convince the large industrial corporations."

In 1972 the Institute of Quality Assurance (IQA) was formed. which in 1981 merged with the NCQR to form the British Quality Organisation.

Crosby(1989) proposed a quality management programme which required competence in every operation, both manufacturing and service, the elimination of surprise non-conformance problems, the reduction of costs and a standard of quality worldwide. "Quality is not what one thinks it is", said Crosby, who measured quality with "the quality management maturity grid" and talked about uncertainty, awakening, enlightenment, wisdom and certainty. Crosby essentially dealt with how to change management attitudes.

Whereas Crosby believed that quality arises from conformance to requirements

and a consequent reduction of costs Deming(1982) believed that quality in terms of design, conformance and quality of sales and service function improves productivity and competitive design. Deming's emphasis on management developing a partnership with labour was closely aligned with Japanese practice.

Feigenbaum(1983) in a restatement of emphasis on management knowhow, said that management must commit themselves to strengthening the quality improvement process itself, making sure that quality improvement becomes a habit and managing quality and cost as complementary objectives. Main (1983) said that Feigenbaum "does not so much try to create managerial awareness of quality as to help a plant or company design its own system".

Fine (1985) postulated that this approach is more consistent with American management practices. He took the existing management culture as a starting point and built quality improvement systems from that baseline. Juran (1988) furthered these views in the *Quality Control Handbook.*

In an article in *The Financial Times* (FT) Wood (1993) stated that "Britain's early lead in standard-setting and quality slumped after World War II. It was a realisation of just how far standards had slipped which prompted a revival of interest in the 1970's and the creation of the BS5750 quality assurance standard in 1979. This has been phenomenally successful, for the British Standards Institution(BSI) and almost solely responsible for the rapid rise in staff numbers to more than 2000 in the past two years." In the FT article , the BSI found itself on trial. The resignation of its Chief Executive and the impending government scrutiny signalled a shake up. Michael Heseltine, the Minister for Industry, questioned whether the 4.5 million pounds annual government subsidy was needed in view of the BSI's mounting profitability and that the present government was also committed to privatisation. "There is growing controversy over BS5750. Small businesses say it is bureaucratic and inappropriate to their needs. They have forced the BSI to set up a committee to review the issue.. Meanwhile there is increasing demand for Europe-wide standards. The countries which take the lead in writing European and international standards (UK, Germany, and France) each account for more than 20% of international standards and can gain considerable competitive advantage. Highly profitable though it is, BSI's transformation from a quasi-civil service bureaucracy into a commercial organisation has been recent and has involved considerable as yet unfinished changes."

In relation to dentistry this background to BS 5750 has more recently been successfully applied to general dental practice in the areas of both quality care and customer service by Sanders(1993) . Wood also examined a government standard called Investors in People (IIP) which aims to improve the training of employees and hence assure quality and efficiency. This project has been developed by the Department of Employment with help from human resource development experts, and is administered by Training and Enterprise Councils.

ISO 9000, the international equivalent to BS 5750, has not been adopted to the same extent outside the UK, The role of the British standard remains controversial . Quality assurance, in the shape of BS5750, has been enthusiastically adopted by many large companies but it is seen as an imposition by some smaller suppliers who are suddenly required to conform to a new set of rules. It's application in dental practice is still debated.

In a business orientated publication relating to total quality management (TQM) Chase (1989) summarised how total quality based philosophies have a proven success and he suggested the answer is found in today's leading-edge multi-national companies, who have discovered how quality, service, information and the organisational structure are interlocked. "The place to start with is your customers. Determine their requirements, design and manufacture products which meet these requirements and then go back to your customers and redetermine their requirements. If your company is customer-driven then total quality, service, information technologies and organisational innovation will follow." This statement begins to sound remarkably like the philosophies currently proposed in contemporary dental practice management seminars. Nevertheless, despite the above there is no consensus on the use of quality assurance systems in industrial and commercial applications.

2. 3. Quality assurance - the medical and nursing professions

Although the foregoing would suggest that the investigation of quality was established far earlier in industry and manufacturing processes than in the medical and surgical arena, it would be erroneous to assume nevertheless that this was a fairly recent procedure in patient care.

Kinglake (1895) describes what is probably the first study of the process of care, that

of Florence Nightingale at the Barrack Hospital in Scutari during the Crimean War. Her attention to the quality of patient management amongst the wounded and ill produced a dramatic reduction in monthly mortality figures from 3168 in January 1855 to only 6 in June 1856. Following her return to Britain, Nightingale (1860) recommended the creation of uniform information gathering that would enable death and discharge rates to be analysed by diagnostic category. The full potential of such a scheme has still to be explored over 135 years later.

Even earlier during the development of Greek medicine there was the mutual influence of physicians and philosophers. Eckerknecht (1982) stated that in *On the Nature Of Man* Hippocrates said, " In all previous attempts to speak or write about medicine the authors have introduced certain arbitrary postulates into their arguments, and have reduced the causes of death and the maladies that affect mankind to a narrow compass. They have supposed that there are but one or two causes; heat or cold, moisture, dryness, or anything else they may fancy. From many considerations their mistake is obvious; indeed this is proven from their own words. They are especially to be censured since they are concerned with no bogus science, but one which all employ in a matter of the greatest importance, and one of which the good professors and practitioners are held in high repute. But besides such there are both sorry practitioners and those who hold widely divergent opinions. This could not happen were medicine a bogus science to which consideration had never been given and in which no discoveries had been made. For if it were so, all would be equally inexperienced and ignorant, and the condition of their patients due to nothing but the law of chance. But this is not so, and the practitioners of medicine differ greatly among themselves both in theory and in practice, just as happens in every other science. For this reason I do not think that medicine is in need of some new postulate or another in order to discuss them seriously. In such matters, medicine differs from subjects like astronomy and geology, of which a man might know the truth and lecture on it without either he or his audience being able to judge whether it were the truth or not , because there is no sure criterion.

During the early years of the twentieth century that followed there was very little progress and this made against substantial opposition from most of the medical profession. Developments were largely confined to the field of surgery where Groves (1908) surveyed the registrars of 50 hospitals with regard to their record keeping and results of surgical procedures. He recommended that all hospitals

should keep detailed records under the guidance of a national committee that would agree nomenclature and compare results.

In the USA, as a result of objections by his colleagues, Codman (1914) in carrying out his investigations into the outcome of various procedures was obliged to resign from the Massachusetts General Hospital. The defensive behaviour of professionals and the apprehension shown towards quality assessment studies has from time to time been a feature of such work. Codman's attempts to link outcome with process, - to standardise hospital care, - led to the setting up of an independent body called the American College of Surgeons which acted in a regulatory capacity. The American College of Surgeons adopted the minimum standard approach. It decided that the "staff review and analyse at regular intervals their clinical experience." Staff members of the college would personally visit the hospitals. "Each hospital is given full opportunity to meet the service normal conditions. By 1951 the standard-setting process expanded to create the Joint Commission on Accreditation of Hospitals. In the 1960's Medicare was introduced by the Federal Government. In 1970 the Accreditation Manual for Hospitals was published. In 1972 the Professional Standards Review Organisation enshrined medical audit in law.

After the creation of the National Health Service in the UK there was a greater interest in the quality of general practice and this period produced a number of studies that had a major influence on its development. Despite a plethora of research into practice however there was not much that was directed to a comprehensive examination of quality. A notable exception was the work of Collings (1950) and Taylor (1954).

Collings' work involved 55 general practices throughout the UK which he visited and watched doctors carrying out their profession in the surgeries and on home visits. He discovered a multitude of problems that together were a condemnation of the quality of care. Practice was not uniformly poor however, but the most notable finding was the variable quality of care which ranged from the outstanding to the unacceptable.

Taylor's research was considered to have a more sympathetic attitude to practitioners, but nevertheless confirmed the wide variation in standards. As a result of these works and others the British Medical Association (1966) published the *Family Doctor Charter*.

The main application of quality assessment protocols in the UK are in the assessment of training practices within the Vocational Training scheme and the protocols of the Royal College of General Medical Practitioners (1985) in their "What Sort of Doctor?" programme. In both of these situations the focus is set rather on the individual professional rather than a broader look at the total practice involving auxiliaries and other important contributions to care. At any time to limit assessment solely to the professional will make it likely that all deficiencies are attributed unfairly. It could be argued that this could lead to an inbuilt obstruction to improvement as the doctor caught within a rigid or imperfect system cannot easily change behaviour.

McGuirk-Porell, et al. (1991) described a performance-based quality evaluation programme developed by a partnership of insurers for a nationwide preferred provider organisation (PPO). It uses indicators to monitor practice deviations from PPO standards representing four components of patient care -- administrative efficiency, patient satisfaction, medical practice standards, and clinical outcome. There are quality improvement efforts to eliminate deviant practices through indirect organisational strategies and direct communication with preferred physicians. The programme's strengths are its effective use of available data, its potential application to other organisations with a loosely connected network of providers, and its ability to simultaneously monitor care received over time by individual patients in various settings.

Celai and Rosser (1993) discussed the introduction of the quality-adjusted life year, (QALY). "Developed by health economists, the QALY combines values attached to different health states with survival data on years lived as a result of medical treatments. Information of QALYS has been combined with information about costs of different treatment programmes, (cost-utility analysis), to produce cost-per-QALY league tables. The construction of the global index, economic analysis in health care, maximising QALYS, the use of cost-per-Qaly league tables and the wider issues of the allocation of scarce resources in health care all raise many issues in need of debate.... With debate , the proposed methodologies may enhance our health care services and help our patients. Without more consideration they could do immeasurable harm."

Fallowfield(1990) discussed the quality of life as the missing measurement in health

care. "Chronic pain can be a difficult problem to manage. Nevertheless keeping an objective approach and not passively accepting previous diagnosis can result in a good outcome for the patient."

Astedt-Kurki, (1993) in an article for a Finnish healthcare magazine addressed the subject of .. "clients well-being and everyday life. We must be convinced that the healthcare profession truly wants to examine its standards, in particular human attitudes and client relations."

Hughes and Humphrey (1991) examined the current methods and the literature on medical audit and acknowledge the confusion that the word audit produces when mentioned in the context of quality assessment and assurance within the medical profession. Audit is defined as the "shorthand to describe all or part of the complex process of measuring, evaluating, attempting to improve and monitoring change in the quality of care provided by doctors. A distinctive sequence of events characterise audit - defining standards, criteria, targets or protocols for good practice against which performance can be compared, systematic gathering of objective evidence about performance, comparing results against standards and/or among peers, identifying deficiencies and taking action to remedy them and monitoring the effects of action on quality." Major areas that have been utilised for practice review are identified. The authors then discuss each of these activities under the headings of scope, resources, and assessment approach. They acknowledge the confusion that exists. "GP's independent contractor status and the nature of their work mean that they are likely to be involved in activities that cut across the boundaries of medical audit, clinical audit and resource management.

"The growing literature on medical audit in general practice includes many different types of initiative, covering many aspects of practice...to confuse the picture further, there are many other initiatives involving review, evaluation and service development in general practice which have avoided the audit label but may contribute to establishing conditions in which audit will flourish. The evaluation of quality on an empirical basis is nothing new and nothing recently controversial."

Hopkins,(1990) in *Measuring the Quality of Medical Care*, acknowledged the unpopularity of the word audit because of its association with business and accountancy. Audit is described as - reviews, quality assessment, quality assurance, evaluation, efficacy, effectiveness, efficiency, appropriate care, rights to care and

ethical care - there is no consensus however. Areas are explored where quality care may be measured. Audit is redefined as "the measurement of quality of care" which is separated into structure, accessibility, process, and severity of illness and outcome. The problems of introducing audit and attempts to define audit are acknowledged but no solution is provided towards its effective implementation.

Self-evaluation seems to be an appropriate method for assessment of nursing standards. Henry and Waltmire(1992) talked of self-evaluation as a "tool." Problems are acknowledged. "High patient acuity, the shortage of critical care nurses, and rapidly changing technology within the critical care environment demand the provision of staff development offerings that are appropriate for the learning needs of critical care nurses." The objective is a self-evaluation tool. The nursing profession appears open to examining itself.

Shaw(1986) highlighted administrative confusion in the medical profession. There is administrative confusion because "Quality assurance is much less specific in meaning or universal in use than most clinical terms. It is therefore difficult to look up; nor is there much written which is applicable to the nature of practice in this country. A further problem of information is the variable quality of clinical records. and the efficiency of retrieval and validity of statistics. Without ready access to helpful literature or to a knowledgeable local colleague, it is hard to know where to start." It is further suggested that the profession itself is only capable of its implementation. "To be acceptable clinical audit should be led by the professions; to be effective it requires a structure able to effect change within its own ranks or to make cogent recommendations to others."

Pearson(1987) stated, "Without the active involvement of the direct-caring nurse, the promise will be no more than one which will measure quality, with no guarantee that care will change. Clinical nurses are those whose major role is to give a direct, professional service to patients or clients. They are people at the sharp end of the healthcare system- the hands-on nurses who are the 'worker bees' of the system. Thus the quality of nursing is influenced by nurse educators, nurse managers, doctors, and health service administrators, but even if all of these are of the highest order, the care itself is still determined by those who give it." The challenge for the nursing profession appears not to be to develop more sophisticated methods of evaluation or to take the road towards more technical expertise, but to seek common goals with the medical profession.

The perceived attitudes of the nursing profession to quality assurance initiatives are summarised by Pearson "Nursing has an objective side to it - parts of its practice can be precisely measured and assessed but much of nursing is subjective and difficult to measure. Knowing this, nurses are prone to dismiss ways of trying to set standards and measure quality. They hope that by emphasising the emotional investment between the nurse and patient, the drive to be more specific will go away."

Phaneuf(1976) described an audit schedule which is process-orientated and appraises the nursing process as it is reflected in the patient's records and it is a retrospective method of quality assurance. The audit schedule utilises the functions of nursing listed by Lesnik and Anderson (1955). These involve the application and execution of the doctor's legal orders, observation of symptoms and reactions, supervision of patients, supervision of those participating in care, reporting and recording, application of nursing procedures and techniques, promotion of health by directing and teaching.

Sale(1990) attempted to simplify the process of quality assurance , gave an historical background and defined quality assurance as the measurement of the actual level of the service provided plus the efforts to modify when necessary the provision of these services in the light of the results of the measurement. Sale said, "Some nurses are put off the whole idea by the apparent complexity of the systems used and most of all by the jargon. Whatever subject you become interested in, whether it be computers, gardening or a foreign language, there will always be new terminology or jargon to learn."

A working party report from the Royal College of General Practitioners (1985) in the What Sort of Doctor? programme asserted that standards in the profession are vague and the practitioner is uncertain about his proper role. There is a need to make value judgments. This value judgment should "rest on shared beliefs and ideals and stand up to the test of common sense." The approach is divided into four areas - professional values, accessibility, clinical competence and ability to communicate with patients and staff.

"Established general practitioners wishing to be assessed in this way may prefer that they first spend a year or even longer preparing themselves and their practices for

appraisal. At least 5 hours is needed for the assessment visit. An assessment grid with 4 columns of evaluation and several methods of assessment, including a practice profile is proposed. There should be an observation of the premises, equipment and organisation, a discussion with ancillary staff and other members of the healthcare team, records, video-taped discussions and an interview with the doctor.

A report on the above programme was compiled by Scholfield & Pendleton (1985) on behalf of the Royal College of General Practitioners. They noted that it stressed the need to define a level of performance for each criterion which could be considered acceptable. They noted the absence of objective evidence and the allowances for different situations and circumstances.

They concluded:"We trust however, that the principle criterion will be the willingness to be involved and to be assessed and that these visits will not be the sole method of a pass or fail assessment. What we do hope is that in the not too distant future, doctors in all faculties of the college will be meeting to decide their own criteria for good practice, and that visiting one's colleagues and being assessed by one's peers will become an integral part of the professional lives of general practitioners."

The value of a system of Continuous Quality Improvement (CQI) to the advancement of Japanese industry excellence vis a vis currently acceptable and orthodox methods of inspection and policing the production line process was discussed by Berwick (1989) who compared it to the theory of "bad apples". "Any good foreman knows how clever a frightened workforce can be....' The inspector says, 'I will find out if you are deficient'. The subject replies, 'I will therefore prove I am not deficient', and seeks not understanding but escape". With a system of CQI in place it is assumed that everyone is delivering the best they can, and that the *process* of manufacture or production is continually monitored, and modified and improved to maximum effect.

The principle was applied to healthcare. "Healthcare is very good today. Together we intend to make it better". Investments in quality improvement were advocated, a re-establishment of respect for the healthcare worker, an open dialogue between the customer and the supplier of care, ("to take the time to listen to each other and to work out their inevitable misunderstandings") Healthcare institutions which "organise for quality", become more sensitive to the cost and the ineffectiveness of relying on inspection to improve quality. Professionals must "take part in

specifying preferred methods of care but must avoid minimalist standards of care".

Various methods of setting up and structuring an audit were discussed by Ellis (1989) , Time, effort and finance are all considered essential to success. All members of a particular team must be determined to make the audit work. In the case of the surgical office,...time would not neccessarily be saved but the pattern of work for team members would change and efficiency indubitably increases. A focus of access to information would put the consultant firmly in control of his or her practice.

Medical audit has been defined by McKee, et al. (1989) as the "systematic, critical analysis of medical care, including the procedures used for diagnosis and treatment, the use of resources, and the resulting outcome and quality of life for the patient." It is "a continuous circle, involving observing practice, setting standards, comparing practice with standards, implementing change, and observing the new practice. In recent years pressure form the profession to implement quality assurance has been increasing. The need to evaluate change has become more apparent because of the relative resource constraints resulting from demographic change and technological development. Political pressures are a feature of the government's desire to see value for money in all public services."

Pressure has arisen also from some sectors of the public. This is partly due to the growth of consumerism McKee et al. believed. They concluded that self-regulation is preferable to an external system of control. "Medical audit reduces unnecessary treatment, identifies patients with continuing problems, and prevents disease. It improves communications which reduce complaints by the public. It is educational. It meets the pressure for regular appraisal of trainer and trainee. and is financially viable. Quality assurance sometimes evokes the spectre of commercial consumerism and is often confused with quality control. Peer review may be more acceptable. Audit is implicit to normal practice. The time required to carry out audit is sometimes a reason given for not doing it. 'Audit substitutes talking for action.' and 'Sophisticated equipment is a basic requirement.' are often fears"

If quality assurance is to succeed it must have the full support of management. Clinicians and management must agree that the prime objective of audit is to improve patient care, and not to reduce costs regardless of quality of service.

Shaw and Costain(1989) discussed guidelines for medical audit. Their seven principles were:-

1. Health authorities and medical staff define explicitly their respective responsibilities for the quality of patient care.
2. Medical staff should be organised in order to fulfil responsibilities for audit and for taking action to improve clinical performance.
3. A regular programme of audit for everyone
4. Audit should be appropriate to practice organisation
5. Clinicians are provided with the resources for audit
6. The process and outcome of audit is documented
7. Audit is subjected to evaluation

These recommendations came at a time when the government, general managers, and professional bodies all agreed that medical audit should be implemented throughout the United Kingdom. Nevertheless, it was not yet decided either nationally or locally how audit should be defined and what its implications would be. In an analysis to find ways of measuring the design and effectiveness of hospital audit, therefore, the seven main measures that emerged might serve as practical criteria. Though generally consistent with the proposals of the government and the Department of Health,these seven principles offered some alternative approaches.

Wilkin and Smith (1986) commented on the differences in utilisation of resources and the differences in outcome. Patient satisfaction was seen as the final arbiter of clinical outcome. This has been emphasised by others. Donabedian (1966) said, "It is the ultimate validator of the quality of care." whilst Devlin (1990) stated his own personal concept in "The quality of interpersonal reactions between clinicians and their patients and between the clinicians themselves is inextricably mixed up with the outcome the patient can expect after treatment. Although doctors recognise the 'bedside manner', they have no agreement of what it is. It is not audited. There are innumerable methodological difficulties to be overcome and in neither the American nor the British literature is there as yet any standardisation of approach."

Devlin advocated change. "We can rest assured that where there are deficiencies in clinical management the judiciary will be quite prepared to determine standards for us. Unless we police ourselves others will do the task for us. Clinical audit is the cornerstone of our vigilance but how many of us participate in this process? How many of us understand it? Unfortunately in medicine there is no universal consensus about our objectives and outcomes. Death, morbidity, and quality of life have all been advanced as outcome measures and each of these has inherent

disadvantages. The values of the risks and benefits of surgical treatment can only be assigned correctly if patients' perceptions are included in the equation."

Shaw (1990) acknowledged that all the aspects of audit, - philosophical, organisational, practical and invasive, - have by this time been discussed. But then goes on to make more suggestions. He said "Defining explicit criteria from the implicit judgment of each individual is an educational and challenging part of audit. It forces discussion and resolution of divergent opinions, which in many clinical meetings would remain unresolved.. It should be emphasised that this stage is merely for defining criteria for screening records; it is not for defining general policies of patient care. Results of audit are a "reconciliation of the existing protocols with what is shown to be actual practice."

Donabedian (1981) again suggested that the use of explicit criteria "reduces to a minimum the use of healthcare professionals whose time is exceedingly costly and whose interest in the review process is less than enthusiastic. Shaw (1990) also agreed with this and said: "The cost of recruiting and training audit analysts will certainly be less than the cost in opportunity of diverting clinicians from clinical practice...It permits an objective and systematic approach."

Audit is only one of the many paths towards the achievement of the quality assurance standard but the feeling is that it will play the major role.

Heath (1990) admitted that "medical practice was often based on habit rather than medical facts." He associates quality assessment with high principles. "The principle of audit is to try to make doctors think constantly about why they are doing things and may in itself lead to a reduction of errors." Before audit came about there was chaos in the ward. He rationalised that "It is not a weapon to save money or to punish doctors, and, used sensibly, it may help our medical practice rather than hinder it.....Techniques of audit are still in their infancy." Audit has only just begun, according to Heath. And so, might one assume, has the establishment of quality assurance within the profession.

"My concern is that the quality approach could be undermined in the NHS and in other health services by a bureaucratic culture. This is a culture that readily adopts inspection and standard-setting imposed from above, a culture that ignores the revolution in human relations and attitudes that is as much a part of the quality

approach as the techniques, disciplines and systems."

Ovretveit (1990) discussed what could be perceived as quality in the health services and suggested that "In manufacturing quality is improved by physical specification, by measurement of the product and by controlling variation. The higher 'intangible' content of health services or 'relational quality' is significant when we wish to use some of the main methods of improving quality - specification, measurement and control. Subtle behaviours of staff and the type of relationship which they establish affects the client's judgment of a health service, and often influences the "cure" or efficacy of the treatment. How staff treat a client in the general sense, indeed in many instances, how they feel about the client, largely determines the extent of client satisfaction. Undemanding clients and low expectations may account for some of the decline in public health services. overcoming the gratitude factor and giving patients a voice will be central to any quality approach."

However, McKee (1994) four years later did not share that same spirit of optimism. "In the three years following , millions of pounds have been spent on clinical audit. Now that audit has had time to become established, many are questioning whether the money has been well-spent. They range all the way from the Treasury, through district finance officers, to individual clinicians."

The paper reported on the findings of several eminent members of the healthcare professions,and some clear opinions on quality assurance through audit are expressed ... "The answer to the question "Is audit being implemented?", is "yes" if it is seen as a tool to manage junior doctors but "no" for the other proposed objectives." The difficulty of measuring change and attributing any observed effect to the introduction of audit was examined and the conclusion made that, while it was not possible to make a categorical statement, it is generally true that not enough change is happening.

The desire to measure everything was seen to lead to a variety of problems. Many of the instruments used are invalid and it is often unnecessary to obtain a precise answer to tackle the issue. Doctors have an ingrained fear of humiliation, a culture of competitive individualism, low consensus skills and a hierarchical view of the world. They tend to get to the top by highlighting their successes and hiding their failures, behaviour that is inconsistent with audit. Such an example was one group of surgeons who decided to involve nurses in multidisciplinary audit. They did this by

asking the sister to collect data that they then discussed in her absence.

The evidence for the effectiveness of audit was not considered to be strong, but its cost low compared with other aspects of health care delivery.

The conclusion was made that some money is wasted but there are examples where quality assurance through audit really does work. It is now time for the Government, the Royal Colleges, purchasers, and providers to demonstrate their commitment to it and make the changes that are needed to support it. This will involve more than providing money. If the Department of Health, hospital managers, and purchasers really do believe in the audit process then that belief needs to be supported by appropriate action and not by homilies. In the absence of such action widespread effective clinical audit will not occur. Money will be spent on a collection of fragmented, haphazard, and undirected activities. These of course will provide little improvement and will cost a great deal of money.

2. 4. Quality Assurance in Dentistry

It is only relatively recently - within the past twenty years or so- that there have been any structured attempts to survey quality levels in the dental disciplines. During the latter part of this period such activities have greatly expanded. Although in the broadest sense such quality assurance can range from selecting the best possible candidates for admission to dental schools through to the best choice of restorative material by a practising dentist, most programmes have focussed on the delivery of dental care

DiAngelis (1984) identified some factors that have substantially influenced the expansion of quality assurance activities in dentistry in North America:

1] A rapid proliferation of dental prepayment systems with attendant concerns over cost and quality.

2] The disproportionate increase of health care costs to the gross national product.

3] The implementation of Professional Standards legislation.

4] Consumer demand for better information and a larger role in the health care process.

5] The increased activity of the courts in addressing quality issues.

It will be seen from the above that quality assurance has been chosen as a suitable tool to address many disparate problems by the profession, governments and the consumer. The range of goals for quality assurance require and demonstrate a need for appropriately designed programmes. Programmes designed to control costs will be vastly different to those designed to ensure increased access to care, say. Whilst the goals of quality assurance may differ it is likely nevertheless that at least one of four major areas of concern will be present in each and every programme: quality of care, access to care, cost effectiveness, and patient satisfaction. Accepting these formats as a basis for a formal QA programme, many levels within dentistry can be defined.

At the level of the individual practice a dentist may or may not organise specific QA activities to monitor the quality of care delivered. This decision rests with the dentist and is not required by law or mandated by the profession. Relevant issues for the practising dentist would include evaluation of the technical quality of the dental care provided, the appropriateness of this care and its timeliness (sequence). Secondary issues would be administrative concerns and the cost and efficiency with which the individual practice delivers those procedures.

Three types of review which measure quality assurance were discussed by Stern (1979) who identified clinical examination as the best measure of technical outcome. Record review determines whether explicit information had been documented and evaluated the appropriateness of the treatment recorded. Profile analysis identifies areas that need in-depth review.

The American Dental Association (1979) considered four basic areas - the technical quality of the services rendered, the art of the care or the process of care which promotes positive health behaviours, the appropriateness of the treatment given and the the access to care. It was agreed that quality cannot be measured directly and "that you can only compare specific elements of performance to a standard and make a judgment. the standards measured were the clinical and functional results of treatment, patient satisfaction, and the increase in knowledge of the patient concerning ways of improving his dental health." Also that "..quality assurance is the development of methods and systems that have the direct purpose of assuring quality in specific treatment situations. any such system must provide for an assessment of treatment plus a method for automatically taking steps to improve or maintain the level of quality in future cases." Further that "quality assurance is

not just a method, but it is also a way of looking at structural considerations, procedural dimensions, and outcome indicators as they affect healthcare. It involves assessment, implementation of improvements if indicated, and reassessment."

Gelbier and Plamping (1983) defined quality assessment and assurance through audit as a "way of reducing any resultant tensions. It is in this context that new means of maintaining professional standards are being sought. Like financial audit, professional audit involves an examination of the books: in this case to see what treatment the patient has received. Clinical decisions may be shared, errors and successes pointed out and improvements in performance suggested. Although there may be difficulty in establishing requisite standards, there are many occasions when it can be agreed that a treatment was bad or good in particular circumstances."

Butler (1984) defined different quality assurance systems. "Criteria auditing is a technique for measuring the quality of care rendered against a set of predetermined criteria with the aim of attaining an acceptable standard. In the utilisation review type of quality assurance mechanism, the frequency of utilisation of a particular service is measured and related to the quality of patient care. Formal case review consists of a regular review of particular case presentations."

Hiles (1988)set out the definition of quality assurance adopted by Wessex Regional Health Authority in the Regional Plan for 1987 as "Agreeing standards of care and service to be provided; assuring those standards by regular measurement of performance; and initiating appropriate change where this is indicated".

In the Clinical Audit Workbook of the British Dental Association (1993) audit - the measurement of existing standards- is defined as a "part of management and different management styles work for different people. You can even call audit something different if you like - quality assurance or quality analysis if you like."
The workbook explains the audit process as a cycle of standard-setting, observation and change. We make changes in order to raise performance, we set a standard of performance to aim for, and we observe the performance level being achieved and compare with the standard. In essence first measurement, - quality assessment and then the maintenance of agreed standards- quality assurance. Clinical audit in dental care may be defined as the systematic, critical analysis of the quality of

dental care, including the procedures used for diagnosis and treatment, the use of resources and the resulting outcome and quality of life for the patient."

Dentistry as an integral and important part of health care shows from the evidence of the foregoing that methods are latterly being established for the collection of valid and reliable data from the practice setting that can be used for, or will facilitate, the evaluation of the impact of treatments, provider protocols and organisational arrangements on the welfare of patients. The development of the dentist as a professional has had an important influence in this respect.

2. 5. The dental professional and delivery of care

The word care is defined in the Concise Oxford English Dictionary (1994) as "serious attention" and quality as "a degree or level of excellence". Since dentistry is a pragmatic and technically oriented discipline it is inevitable that most dentists think of the excellence of technical dental care when they think of quality, whereas a wider understanding of care in its fullness is required.

Leatherman (1961) set out the evolution of dentistry as a health care profession, and Greenwood (1957) defined the five major attributes of a profession. The first is the presence of systematic theory. The second is professional authority wherein the professional dictates what is good or bad for his patient, who gives him this authority in the belief that the professional's knowledge will enable him to make the correct judgments. The third attribute is formal and informal community sanction of the profession, it's powers and privileges. Fourth is a strict code of ethics in the form of statements of the appropriate behaviour of the professional to his patients and also fellow professionals. Greenwood's fifth attribute is a professional culture consisting of values, norms, and symbols. The social values of a professional group are its basic beliefs the premise on which its existence rests. In the forefront of these values is the essential worth of the service that the profession provides, leading to the possession of professional authority and monopoly. Greenwood also observed that the norms developed by professional groups to govern their own conduct are often more stringent than those laid down by legislation.

Rowbottom(1971) gave six characteristics for recognition of a group as a profession

1. The existence of a body of knowledge at a scientific level

2. The knowledge is applicable - a technology exists.
3. There is an exclusive competence - the science and technology is accepted beyond the lay group (esoteric element).
4. Hence the profession itself must be responsible for the transmission and development of knowledge, training and research.
5. Members subscribe to a prime ethic of service rather than self-interest, but at the same time remain independent of the value-systems of clientele (detached involvement).
6. The profession controls entry and exit of its members.

Carr -Saunders & Wilson (1933) published an early treatise on the development of professions and looked at common features of professional occupations.

Gelbier (1980) noted that *Johnson's Dictionary* in 1733 recorded that "a profession is a calling, particularly divinity, physic and law." Also that Robert Campbell's *The London Tradesman* in 1740 makes no clear division between professions and other occupations. Pinmakers, weavers, merchants, physicians and attorneys being classified together with various "trades".

Elliott (1972) stressed the need to distinguish professional occupations in pre-industrial and post-industrial societies. The Industrial Revolution led to an extensively developed new style of occupational system supported by a growth in technical knowledge. The latter led to a vast expansion in education and changes in the educational system, with the new professionals forming part of the upper or at least middle classes.

The Industrial Revolution no doubt led to an upsurge in the development of the professions in many countries as an increased specialisation of labour was a corollary of developments in scientific and technical knowledge.

Gelbier (1980) said " The professions in developed countries are a Victorian creation, brought into being to serve the needs of an industrial society. Of course, there were practitioners of most professions long before they became organised by the development of formal professional associations, regulations for training and certification for practice.

Despite the fact that many professionals regard themselves as vocationally driven skilled and learned men and women, Johnson (1976) suggested that they are

nevertheless organised conspiracies against the consumer and society at large; and their ideology of service is a mixture of self interest,deception and effective public relations.

Goode (1960) said:

1 A profession determines its own standards of education and training.

2 A student professional goes through a more extensive socialisation experience than students in other occupations.

3 Professional practice is often legally recognised by some form of licensure

4 Licensing and admission boards are run by members of the profession

5 Most legislation concerned with the profession is shaped by that profession

6 An occupation gains in income, power and status and can demand higher calibre students.

7 A practitioner is relatively free of lay evaluation and control

8 The norms of practice enforced by the profession are more stringent than legal controls

9 Members are more strongly identified and affiliated with the profession than are members of another occupation with theirs

10 A profession is more likely to be a life-time occupation; members do not care to leave it, and a high proportion assert that if they had to decide again they would once more choose that type of work.

The foundations for professional standards in modern dentistry were nevertheless laid in France. Gelbier (1980) considers that "Pierre Fauchard's (1728) book *Le Chirurgien dentiste ou treate de dents* was the first serious work on dentistry . John Hunter's (1771) *The natural history of the human teeth* published later in England describes the general and comparative anatomy of the human dentition , and became a reference for scientific dentistry throughout the world."

Many of the existing dental hospitals and teaching establishments began as 'dental dispensaries that developed later into institutions of learning and research.

Guy's Hospital in 1799 was the first hospital in London to appoint a dental surgeon to its staff. This dentist, Joseph Fox soon began to set up a training programme for his students. In 1856 John Smith in Scotland set up the first comprehensive course in dental surgery for medical students. These lectures were also attended by dental practitioners, examinations being eventually held to assess knowledge and standards.

The London Institute for Diseases of the Teeth was established in 1839 at 10 Windmill Street. Ten years later The London Dental Dispensary with its consulting dentist John Tomes opened near Regent's Park to provide treatment for the poor. Its founder and benefactor was Charles James Fox.

A dispensary in Birmingham was opened by a former pupil of the London Dental Dispensary, Samuel Adams Parker, and this eventually became the Birmingham Dental Hospital in 1871, A similar dispensary opened in Edinburgh in 1860. In 1879 it became the Edinburgh Dental Hospital and also the first dental school in Scotland.

Meanwhile in the USA the Baltimore Dental School had opened in 1840 to become the first dental school in the world and this stimulated moves in England towards a division of opinion as to the way forward. Some dentists favoured the establishment of dentistry as a sub-specialty of surgery and petitioned the Royal College of Surgeons to this affect. It was not until 1858 however that these petitioners or "Odontologicals" as they were known succeeded in gaining a clause in the Medical Bill progressing through Parliament that enabled the Royal College of Surgeons to grant a Licence in Dental Surgery. The first diploma was awarded in 1860.

In 1878 the first Dentists Act became law and the first Dental Register was established. This was only partially successful however in preventing the "unqualified quacks" continuing to practice. It was not until 1921 when a later Dentists Act created a closed shop by making the only way onto the dental register a recognised qualification from a dental school. It was not really until 1956 that the dental profession could be considered fully established when a further Dentists Act derived an independent General Dental Council set apart from the General Medical Council.

Gelbier (1980) stated with regard to this autonomy which is seen as an important block in this professional growth: "Autonomy is an important structural and attitudinal attribute for professional, This includes the rights to make their own decisions without external pressures from: clients, other people who are not members of their profession, their employing organisation (if employed), or from another paymaster (eg an insurance company)."

"Most dental practitioners want clinical freedoms, but it is doubtful if full autonomy in the sense of freedom to do everything one wishes for a patient is fully achievable.

The concept of autonomy varies in relation to different employment settings. Even self-employed dentists do not have a full choice to do as they wish. As they rely on patients to pay for treatment then the patient decides what treatment is acceptable. In spite of autonomy, if treatment is too expensive then the dentist might have to respond to the patient's financial pressure and change his plan of treatment. On the other hand, the dentist does have autonomy to say no to a patients request and can send him away if he believes that a particular course of treatment would not be in the patient's interest. He has an absolute right to give or withhold a particular treatment."

"An important consideration is whether professionalisation brings advantages to patient care, or leads only to the advancement of the professionals themselves. In fact there is an interplay between satisfaction of both of their interests. In order to gain professional status, dentists had to improve their scientific knowledge and training, which gave rise in turn to higher standards of care. Closure of the Register to all but qualified people ensured that patients were no longer subject to unskilled treatment. On the other hand, such restrictive practices lead to manpower shortages, which is to the detriment of patients. A shortage helps to raise incomes, but there comes a time when the public complains and governments must take notice of their complaints. There are then political pressures on a profession to alter its practices. The introduction of new types of dental auxiliaries without the consent of dentists is one way in which governments can exert pressure as a response to public concern. Indeed, that is what happened when the UK Government forced the GDC in 1960 to oversee an experimental training scheme for Dental Auxiliaries, (later re-named Therapists)".

Dentistry therefore has progressed from a "trade" to a scientific discipline and profession. The criteria previously described by Rowbottam have now been satisfied.

Wilensky (1964) noted that occupations can be observed to pass through a consistent pattern of change on the road to becoming established as professions and these are:

1. Creation of a full-time occupation
2. Establishment of a training school. Affiliation is sought with a university, reflecting the knowledge base and efforts of the early leaders to improve the lot of the occupations, The newer professions often now start with a university base.
3. Formation of a professional association
4. Attempts to eliminate incompetent practitioners ie political agitation to win the support

of the law for the protection of job territory from competing occupations. this might include legal protection of the title (of the profession).

5. Formation of external and internal codes of ethics. External means clients and public relations; internal refers to colleagues

The above process is often accompanied by redefinition of the core tasks and establishment of an order of delegation. Especially, types of auxiliary personnel develop who are able to accept responsibility for less technical procedures. The following auxiliaries are currently recognised in the UK:-

1 Operating

Dental Therapists (equivalent to new Zealand Dental Nurses)

Dental Hygienists

2 Non-operating

Dental Surgery Assistants
Dental Health Educators
Dental Technicians

These rigid role outlines may well change subsequent to consideration of the possible expanded duties that may be appropriate in the future as outlined by the Nuffield Foundation report on *Education and Training of Personnel Auxiliary to Dentistry*(1993)

The evolution of education and professional attitudes formed an important part of the elimination of "quack " practitioners who were considered by the developing professionals to be incompetent. Hughes (1958) nevertheless defined the quack as "the man who continues through time to please his customers but not his colleagues."

The UK Monopolies Commission (1970), suggested three essential conditions for a profession:

1. Professionals are required to be expert in a particular area of activity for which advanced and extended formation is necessary and practice in which requires a high level of theoretical foundation (NB: formation here means preparation for service and includes academic learning and practical experiential training.)
2. Professionals have custody of a clearly definable and valuable body of knowledge and understanding.
3. Professionals accept responsibility and accountability for the decisions they make against recognised values and standards of conduct.

Finniston (1980) , said, "to be an amateur carried social class value distinguishing

between the individual practising a particular skill and being paid for it, and the individual who engaged in the same exercise for enjoyment.

"Today the cachet professional is one which is sought after, the word giving an added status to the individual himself...of whether or not he belongs to an organisation of those practising similar skills. The term professional, like most well used words in the English language, has undergone considerable change over the years, especially recently.

"Professionalism can thus mean many things to many people. It may be understood when applied to certain classes of occupations like doctors, dentists, or lawyers; it may be understood in a different sense when applied to golfers,, tennis players, boxers, footballers and actors where it means a mixed concept of being paid to do what many people consider a leisure or play activity, combined with a degree of natural or developed skill not requiring academic attainment; it may even be understood in a still different sense when seeing television advertisements for trained soldiers with advanced skills in the operation and maintenance of high technology equipment requiring some restricted knowledge."

"So there are differences because of the uncertainty. Thus, in entertainment or sport the skills are evidence in competition; in medicine and dentistry there is no such personal combat between practitioners.

"In a capital intensive industrial society it is semi-skilled people whom industry tends to replace with machines. Professional machines are developed to augment the human skills.

Finniston felt that codes of conduct are essential in relation to professional life:

1. No professional should withdraw his labour for whatever reason. In this respect it would differ from those trade unions who assume the right to strike and the right to work at one and the same time. If a profession is catered for by a trade union it is the rules of the union which must bend to the rules of conduct of the profession.
2. The boundaries in which action or decision can be taken should be defined by law, (if possible), in this case the law of the land and/or rules set down by the

professional body itself. he quotes Lord Redcliffe-Maud who in his 1977 Wilfred Fish lecture to the GDC on "Professional Responsibility" said, " What matters most is not the system but the professional integrity of the individual member of the profession and his readiness to agonise when his professional conscience is in conflict with what the state tells him to do or to accept." In Finneston's view it is too burdensome for the relationship between a professional and society to be subjective, facing the individual with the responsibility which is better resolved by corporate decision of fellow professionals and more likely to be sustained in public criticism or discussion if related to the corporate views of the profession as a whole.

3. The professional should always be concerned with improving the status of his profession, not just as a matter of pride of self but by society in general. Such improvements are not induced by self-satisfaction, apathy and even less by obstructive- even destructive- elements of behaviour which operate in present day society and which have led to present dissatisfaction with for example some features of the social services.

The implications for dental care start to become clear. Especially for the 20th and for part of the 19th centuries increases in dental knowledge and improvements in dental care have occurred mainly as a result of this increasing professionalism. Until most recent times dental care has been delivered much as has medical care, on an "jobbing" basis as episodic care typified by say, a periodontal problem, a caries problem, an endodontic problem etc. etc.. The one in need of treatment - the patient - has had a passive role for most of history. Michael(1968) in his holistic approach discussing this aspect in a journal of osteopathy suggested that the traditional approach should continually be challenged for a variety of reasons.

Bailit et al (1974) suggested that the state of the art in contemporary dental care is such that the professional clinician must consistently depend on technology, complication in techniques and instrumentation, and increasingly on other people . The managerial role is ever important, and in the provision of comprehensive care many kinds of different interests are in competition. The final outcome cannot be predicted with any certainty. Nevertheless Allen (1989) has stated that the service delivered by the professional is produced and judged at the time of delivery, making dental practice very sensitive to operational execution. Forward looking contemporary practices should prioritise creating an environment in which the patients' needs and satisfaction are at the top of the organisational pyramid.

The role of quality in the mind of the purchaser in relation to the continuing education status of the provider professional in dentistry is often assumed to be favourable where evidence of higher diplomas or a consistent record of postgraduate participation exists. When this has been measured the relationship has been shown to not be the foregone conclusion expected. Weinstein (1977), examined patients of dentists who had returned questionnaires describing their continuing education experiences. They concluded that the basic assumption that continuing education will automatically improve the quality of dental care was not supported."

Morris et al (1989) acknowledge but do not understand the essential point decided by the very nature of the dental profession. "For any such programme to be successful, however, dentists must perceive the need to change." To perceive this need to change dentists must first know themselves and their patients.

The evolution of the profession then, is reflected in a move towards the wider acknowledgement of quality assurance procedures.

2. 6. Assessment approaches.

There is no doubt that any assessment methods currently existing and applied in dental practice have been influenced by earlier work in medicine. (Lee & Jones, 1933; Donabedian 1966; Brook 1973; Sanzaro & Worth 1976; Donabedian 1981). However the dental profession in the UK in this field lags behind the medical profession in conceptual application, acceptance, and practical quality protocols by about fifteen years or so, and behind the dental profession in the United States by about a decade.

Inherent differences in medical and dental practice limit the extent to which existing medical practice assessment technology can be directly applied to dentistry. The main differences firstly relate to the fact that most dental care is provided on a non-institutional ambulatory basis in privately owned or leased dental premises. Secondly, dentistry is primarily concerned with two chronic conditions - caries and periodontal diseases .The treatment of these two conditions and their sequelae, loss of teeth, constitutes the major activity of dentists in general practice (Dental Practice Board Annual Report 1991-92) . Finally, dental treatment procedures involve the application of sophisticated surgical and restorative skills, which require

considerable technical expertise, sometimes requiring magnification to achieve high standards, even though the initial disease diagnosis is perhaps less complicated than in medicine.

In many ways these differences account for the emphasis that dental review and assessment procedures have placed on ambulatory services and on specific parameters of restorative care. Relatively few studies especially in the UK exist on the broader aspects of the quality provided in total patient care and the appropriate nature or otherwise of particular programmes or philosophies of care measured against parameters of best current practice.

In North America, some exceptions to this generalisation provide the basis for contemporary systems of assessment before attempts in setting up quality assurance programmes are made on a large scale in this country. Under the auspices of the American Dental Association many workers have actively studied quality assurance in dentistry for considerably more time than has been the case in the UK. . Much of this work has been conducted under contract to the Health Standards and Quality Bureau, the Department of Health, Education and Welfare, and has defined quality assurance for dentistry, determined what activity was directed in this area, and identified who in dentistry was involved, found how they were involved, and investigated the implications of this activity.

Friedman (1972) set up a "Basic Guide" for assessment of dental programmes and later established specific and explicit criteria for examining treatment planning and the treatment dimensions of quality, his Dental Care Index. It subsequently has been used to measure the incidence, prevalence and severity of dental caries, the effectiveness of preventive programmes involving fluoridation, and as an empirical dental care index in paediatric dentistry .

Of this index Friedman says:

" The Dental Care Index combines both process and outcome features of dental care. Like other indices it is patterned after incidence, prevalence, and severity, but of care, not disease. In terms of care, incidence refers to the initiation of care for the newly eligible population (primary utilisation) prevalence to the ongoing process of care(maintenance utilisation) and severity to the extent or depth of care (scope of services and completion). In other words, primary utilisation, secondary or maintenance utilisation and completion of diagnosed needs form the major

performance features of the Dental Care Index. But performance takes place in a setting that is more or less organised to achieve specific goals. An adequate organisational base is necessary for the achievement of adequate performance. Therefore the DCI begins with measures of organisational features under the major headings of qualitative and quantitative adequacy".

Friedman's Index was a composite and its description took up seven pages. It did not measure the technical quality of care as such. For that purpose Friedman(1972) developed dental assessment methods based on review of treatment records and radiographs without direct examination of patients. The emphasis was on reasonable quality and can be applied equally effectively to solo and group practices as well as institutions.

Friedman(1985) considered that despite the widespread usage of the terms quality assurance, criteria and standards, there was virtually no consensus on their application, "It is no exaggeration to state that the terms are used more to give the appearance than actually to measure the effectiveness of treatment. Nonetheless, they have become part of our jargon, and, as such, they represent a wish , an intention, a recognition of professional responsibility and accountability to the recipients of dental care. But that is the state of the the art and science of dentistry. As artist and scientists we have much to be proud of...none of us is the best and none the worst at all times."

The American College of Dentists (1972) sponsored a "new and unique educational programme consisting of a series of periodic self-administered tests designed to offer general practitioners the opportunity to evaluate their professional knowledge and competence and keep abreast of new advances in all phases of dentistry. The programme, Self-Assessment and Continuing Education in Dentistry, will provide dentists with a measure of their own continuing educational progress, and enable each participant to compare his knowledge with that of his peers, and serve as a valuable learning experience. Along with his test scores, each dentist receives statistical information about his relative standing in comparison with other dentists who took the same test, the correct answers to the test questions and an annotated bibliography for further reference and study. All test scores will be strictly confidential and sent only to the individual who took the test. No other use will be made of the scores."

Assessment instruments have also been developed by the American College of Surgeons(1974), whilst Jenny (1973) and Weinstein (1978) scrutinised the provider/patient relationship, and development of patient assessment questionnaires was carried out by Davies & Ware (1981) and Kress(1982).

De Jong & Dunning (1970) reported on three types of evaluation of quality in dental treatment. The first is the direct observational technique, which allows a first hand appraisal of procedures as they are rendered. The second is the post-treatment evaluation where the end result of the programme is reviewed. The third method involving review of the patient's records was one which was considered to have the greatest potential. This judgment was based on an examination of the 20-year experience of the NHS in the UK where the treatment patterns and practice profile of participating dentists was analysed. According to De Jong & Dunning, the statistical results correlated very well with the quality of services provided.

This system is in use today and still has two disadvantages. Firstly, analysis of quality by this method only measures patterns of treatment and secondly cannot evaluate individual service quality. Jago (1974) for instance considered that a significantly wide deviation by a practitioner is not necessarily caused by inferior treatment or errors in patterns of treatment.

Abramowitz & Meckelburg (1972) described the approach of the US Indian Health Service (IHS) to the maintenance of quality in its dental programme. They particularly noted the ambiguity of the word "quality" . Acceptable standards of quality as measured in the IHS are levels that are established as the minimum measurable levels considered desirable, attainable, and adequate as determined by those persons who must work to achieve those standards.

For the evaluation to have meaning the differences that exist between each level of quality determined in evaluation and the standard of quality must be studied and appropriate action taken. The dentist providing the services would be expected to take part in such an analysis with the evaluator, and the reasons for the variations could be determined.

Soricelli(1968) described the methods used by the Philadelphia Department of Public Health for the maintenance and promotion of quality in dental programmes. Good administrative method is advocated as the secret of success. In order to

ensure consistent quality of care by personnel in this department the first requirement is a detailed job description and the the testing of applicants with regard to suitability of performance prior to appointment. This is followed by a six month probationary period, and a twice yearly programme of continuing education. A meticulous record of the quality and quantity of service is maintained for each individual dentist and this also involves a post-treatment evaluation by a senior member of the faculty of a Philadelphia dental school. Soricelli states: "..Every man on our staff boasts of our method of evaluation and proclaims the results loudly. Each one admits as does almost every other dentist who has worked on the programme that the entire system of evaluation has made him a better dentist."

Some authors emphasised the important relationship and influence of assessment procedures directly on the practice of dentistry and the educational programmes that are a precursor. Hiles (1988) , said, "recently quality assurance has replaced clinical audit, performance review and performance appraisal as the term used when seeking a method of measuring and assessing the quality of a service provided. Quality need not be expensive. Excellence in the dental context can actually bring savings. A well-run and friendly clinic, with well-trained staff, results in relaxed and co-operative patients, so that the treatment cay be carried out more speedily and to a high standard."

Atchinson (1989) said " the identification of dentists who are delivering poor quality is not sufficient there is need for a direct link between state boards and these educational programmes. Quality assessment does not stop at the assessment level but rather requires corrective action...corrective action in the form of remedial education highlights an important role for the nation's dental schools."

Many of the above and other systems of evaluation employ assessment methods which can be grouped for consideration into three primary categories. :

- Assessment of specific treatment components
- Assessment of the delivery of care by indirect methods;
- Assessment by direct practice observation

2. 6.1. Assessment of specific components of treatment.

The literature contains a number of publications that represent the use of various criteria to measure what is really the technical quality of care.

Beideman (1976) studied quality in radiography and defined deficiencies in radiographic films that would render them unsatisfactory. In order to upgrade the technical quality of dental radiographs a number of screening recommendations were made. A total of 1 000 case submissions were received. All case submissions received the previous day were examined. There were 412 full-mouth and 588 partial-mouth series. For each series a rating form was used. All films were viewed in a regularly lighted treatment room using a conventional dental radiograph view box.

Rating factors included 12 points:-

1) Sufficient number of films for proposed treatment
2) Density
3) Films mounted and identified right and left
4) Processing
5) Root apices visible
6) Horizontal angle
7) Vertical angle
8) Film positioning
9) Pathology fully visualised
10) Cone cut
11) Bent films
12) Other.

Although the majority of full-mouth and partial mouth radiograph series submitted to Pennsylvania Blue Shield were substandard by these criteria, it was concluded that the project had been worthwhile in achieving rigorous quality standards which covered the majority of errors encountered. Most of the above criteria have found universal application and are still applied and appropriate today in many programmes.

Several other contributions in the area of radiography have been made firstly by Barr(1966) Barr's study was not conclusive.He posed many questions.

"Perhaps even more important, just what is involved in an objective search for the deviations from normal appearances which may be revealed on radiographic

images. How should such findings be reported? On what basis can their meaning and their significance be comprehended? Is there sufficient recognition of the background of knowledge prerequisite for their valid understanding? What kinds of professional judgment are called for? And how are these best developed? At what stage in diagnostic studies should radiographic surveys be introduced or considered? And how should radiographic findings be utilised toward the development of valid diagnoses?" However, his findings are disappointing.
"Possible approaches to upgrading the yield have been explored, in some instances without particularly helpful solutions beyond the recognition of unavoidable limitations.

"In a significant number of directions, however, specific suggestions have been developed which could assure a rewarding and productive extension of the diagnostic contribution to be anticipated from radiographic studies."
Barr also stated that, "the potential contribution of radiographic examinations has yet to be fully realised.'

Mayes (1974) in conjunction with Blue Shield developed criteria for evaluation of radiographs. It was in 1973, in response to a review of Mayes own methods for assessment of radiographs, that the preliminary stages of revision had begun The author recounted from personal experience. "During the year 1970 an event changed the emphasis in the role that the carrier would be playing in the health care of people for Pennsylvanians. Herbert S Denenberg was appointed Insurance Commissioner of the Commonwealth. many things changed. In regard to the prepaid dental programme, I was summoned to the Commissioner's Office on April 23, 1973, and informed as now follows:
"We have just reviewed your programmes for control of quality. We find them to be totally inadequate in protecting Blue Shield subscribers. We think it is about time that Blue Shield subscribers receive some assurance about what they buy. you have been responsive to the profession and that seems to be the keynote of your programme. It's time to be responsive to the subscriber. Keep us informed of your progress and the development of your Quality Assessment Program on a month to month basis."

Farman and Shawkat (1981) in a survey of dental schools revealed little standardisation of student requirements for dental radiography in the United States. "There was a high degree of variability as to what constituted a full radiographic

survey, and this has implications concerning the total amount of radiation to which a patient may be exposed.. There was little in the way of standardisation regarding preclinical training requirements in dento-maxillofacial radiology in dental schools in the United States....."

The American Dental Association Council on Dental Care Programmes (1975) highlighted the heterogeneity and variability in requirements regarding the scope and numbers of procedures to be completed by dental students. Questionnaires with covering explanatory letters were sent to those responsible for teaching dental radiography at the 58 dental schools in the United States. The questionnaire consisted of 21 questions involving pre-clinical and clinical requirements for dental students in dental radiography and the techniques used.

The measurement of the quality of dental restorations was undertaken by Ryge and Snyder (1973) who considered specifically "..the clinical assessment of the quality of an amalgam or resin restoration shortly after it has been placed". Three separate characteristics - surface and colour, anatomic form, and marginal integrity were examined and specific criteria were developed by which they could be analysed. They proposed a four part scoring system based upon conformity with their criteria. Ryge & Snyder established two quality designations, satisfactory and not acceptable. The operational categories for the first designation are "meets all standards," and "observe at next visit"; those for the second designation are "replace for prevention," and "replace statim." Specific criteria were developed for each of the four categories with respect to three characteristics: surface and colour, anatomic form, and marginal integrity. Field tests were conducted by two dentists who examined 991 restorations and who reexamined 109 of these restorations for determination of examiner agreement with self. The study was designed to reflect the overall quality of care rather than distinguish between individual providers. Several areas in the programme were indicated that required improvement.

Anaise and Ehrlich(1977) developed guidelines for scoring fillings, crowns, and also bridges in adult kibbutz residents in Israel. The quality of the restorations was low and is was suggested that the lack of standardisation of performance levels in Israel contributed to this. The study points clearly to measures which can be initiated to increase awareness of this problem and to define specific steps for improving the quality of restorative dentistry delivered in Kibbutzim in Israel.

Novetsky and Razoog (1981) and Razoog and Lang(1978) also discussed the uses of prosthetic checklists in undergraduate programmes to simplify the standardisation of the quality of procedures delivered.

In endodontics Abou-Rass (1973) tested two rating scales in dental school endodontics programmes. Similar scales have been applied by Greene(1972) in the areas of diagnosis and patient interaction. Greene concluded that it is important to evaluate the overall performance of a student rather than the end product or result of treatment. He divided clinical performance into five behavioural components and specific performance criteria are described for each of these five components. In this way, he concludes, effective or ineffective clinical performance can be more clearly identified by both teachers and students. He recommend a policy of grading by more than one instructor to increase the reliability and validity of the system and also to protect the student against negative bias from any one instructor. It is also suggested that evaluation in clinical situations should be made periodically rather than constantly so that both teachers and students might use the major portion of their time to pursue their respective roles in the learning process. The five behavioural categories which were subsequently sub-segmented are:- Diagnosis; Information gathering and problem solving; Selection of treatment; Operating technique; Relating to the patient; and Professional behaviour. They are divided into columns of "effective" and "ineffective."

Gaines(1974) in a fixed prosthodontics programme stated : "Whenever two or more ratings are involved independently in the determination of student ratings on a given product, the extent to which their ratings are inconsistent is a cause of concern for course directors as well as students". The effect of a set of unreliable ratings is that a students's grade will tend to vary considerably, depending upon the rater who assessed his product. It is difficult to separate the rater from the rating scale as potential sources of unreliability, since the two become confounded in the measuring process. Consequently an unreliable set of ratings may result from a faulty instrument, from idiosyncratic raters, or from both. Another aspect of the same problem is that a rating scale may lack objective criteria and standardisation and may be subject to varying interpretations and uses, which will tend to produce measurement error or variance. Therefore, as the first step in achieving consistency between raters it was suggested that ratings can be interpreted objectively.

Grasso, et. al. (1979) studied the quality of a broad range of restorative care. An assessment was made of the technical quality of restorations, crowns and fixed bridges. Assessment was by clinical examination, radiographs were not used. The subjects of this study were University of Connecticut Health Centre employees and the examiners were faculty members from the dental school, so the sample was not representative of the general population, consisting of a small group of people who perhaps by nature of their occupations and place of employment could be expected to receive a high level of dental care.

The most startling feature of this study however was the generally high quality of care seen in most of the routine restorative procedures in amalgam and composite with 93% of the services performed being rated acceptable in each criterion. With regard to the quality scores for inlays these were uniformly high for all categories. The high quality - it is postulated - may relate to the superiority of the material or "perhaps patients who can afford to have inlays tend to gravitate towards dentists who have special expertise in this procedure" The small number of inlays in the sample limits the generalisation that can be made.With regard to the amount of amalgams rated inadequate, this study is similar to others conducted in other countries.

Studies not specifically or predominantly concerned with quality issues have shown that certain parameters in the restorative procedure can exert an influence on the quality of the result and should be considered in the criteria for success.

Gilmore & Sheiham (1971) studied data and radiographs from 1976 New Mexicans aged 18 to 44 years to determine the relationship between overhanging posterior restorations and the severity of periodontal disease. A significantly greater severity of adjacent periodontal disease was found associated with overhanging posterior restorations than adjacent to homologue tooth surfaces. This finding and the high percentage of posterior restorations which had overhangs indicates that overhanging dental restorations are important local factors contributing to the periodontal disease.

Leon (1976) concluded that ideally all margins should be supragingival and therefore every attempt should be made to achieve that relationship. Irrespective of the quality of the restoration its mere presence at or below the gingival margin will result in poorer gingival health.

Grasso et al (1979) stated that the average well trained dentist will always make an error in inserting amalgams. These errors may originate from the normal pressures of dental practice, coupled with limitations in the techniques and materials used in the placement of such restorations. These conclusions can give rise to difficulties when attempting to elevate levels of care through quality assurance programmes.

An evaluation of the quality of childrens' dental programme by means of a systematic procedure to assess the standards of restorations delivered was carried out by Webster & Mink (1983) The rating method involved was similar to that carried out by Ryge & Snyder (1973) . There are two quality designations and four operational categories. The quality designation "satisfactory" has two categories -
1] meets all standards and 2] observe at next visit.
The designation not acceptable also had two categories -
1] replace for prevention and 2] replace statim (immediately).
The difference between the two categories was whether damage to the tooth is occurring or is likely to occur. From an operational standpoint the restoration should be replaced in either instance. The study was designed to reflect the overall quality of care rather than distinguish between individual providers. Several areas in the programme were indicated that required improvement.

Shaw, et al. (1991) stated that orthodontics had been defines as the "correction of irregularities to create not only greater resistance to disease, but also to improve personal appearance, which later will contribute to the mental as well as the physical well-being of the individual." Shaw et al suggested that, "although these aims of treatment are laudable there has been a disappointing lack of evidence justifying orthodontic treatment in recent years. Furthermore it cannot be overlooked that the benefits of all medical and dental intervention have to be balanced against treatment risks and costs in order to safeguard individuals from procedures which are of little benefit or even harmful, and to avoid squandering limited resources for health care."

They examined the sociological and psychological benefits of successful orthodontic treatment which can improve the patients appearance, but, as Shaw and Richmond acknowledged, there are many associated risks which can directly impair a favourable outcome. "As with most medical intervention orthodontic treatment is not without significant risks. These include the possibilities of tissue

damage during treatment, an increased susceptibility to dental disease and dysfunction following treatment, and partial or complete failure to accomplish the goals of treatment."

"Perhaps the greatest risk in orthodontic treatment is that of partial or total failure in accomplishing a worthwhile, lasting change. This may be caused by poor co-operation by the patient and/or incorrect diagnosis and mechanics on behalf of the operator. Shaw et. al. continued, "Naturally, a crucial factor in orthodontic treatment failure is poor cooperation, in fixed appliance therapy, non-compliance in the use of elastics or headgear commonly leads to anchorage loss and compromised treatment objectives. However, with removable appliance treatment the situation is exacerbated by the non-wear of the appliance. High discontinuation rates occur among British patients and are clearly age-related. Although the figures of Haynes, (1972-79) , overestimate discontinuation through poor cooperation, (some patients may have been transferred elsewhere, they give no indication of the many treatments compromised by intermittent wear of appliances."

Shaw et al further described the development of reliable indices to evaluate treatment need (Index of Treatment Need, IOTN) and the standard of treatment (The Peer Assessment Rating, PAR). The IOTN is designed to assess both dental aesthetics and also dental health needs. Whilst the PAR index provides a single summary score for the overall alignment and occlusion achieved. Several practical uses of the indices are described. The estimation of treatment need in an unselected and refined population, and the assessment of the standard of treatment in the Hospital and General Dental Services. Shaw and Richmond suggest that the use of such indices would offer several advantages:

- Uniformity in prescribing patterns
- Safeguards for the patient
- Patient counselling
- Maintaining and promoting standards.

It is only human nature that orthodontists are more inclined to report success rather than failure, but such critical appraisals as have been carried out are salutary. In a stringent review of completed Norwegian cases, (Berg, 1979) only 43% of individuals studied possessed all the criteria required to be judged as fully successful. "Shortcomings in treatment of Class 1 malocclusions were root resorption, non-closure of extraction space, rotations, myofunctional problems, loss of anchorage, poor axial inclination , and compromised treatment. In Class 11 division 1 patients ,

failure of overjet reduction was noted in around 30% and in more than 50% in the case of large overjets. Over half of treated Class 111 malocclusions were also judged to have shortcomings in the result.

A general practice study of the quality of periodontal care with particular reference to the presence or absence of information necessary for an adequate diagnosis and treatment plan was carried out by McFall, et al (1988) who surveyed dentists and patients in two North Carolina counties, each with a population of approximately 100,000. A total of 36 practitioners volunteered. They stated "...the principal threat to external validity in this study would appear to be in the direction of underestimating the prevalence of periodontal disease in North Carolina practices."
McFall et al continue, "patients who regularly attend the practices of general dentists do demonstrate risk factors associated with periodontal disease. Over 80% of these patients had plaque present on the index teeth. Although the majority of the scores were in the lower plaque range, the distribution of plaque in various areas of the mouth suggest a lack of conscientious patient plaque control. It was anticipated that these patients, knowing in advance of the clinical examination, would have made an effort to improve oral hygiene prior to the exam." But, "there was clear evidence of gingival disease that required professional care."

McFall et al conclude, "Patients in this study, with regular professional care, did not have their gingival condition acceptably controlled." Apart from radiographic information the data suggested that the majority of patient records do not contain sufficient diagnostic information to describe periodontal health. The conclusion that general practitioners may not be sufficiently recording clinical findings was made, with inadequate information being available to evaluate changes in periodontal status over time.

Glantz, et al (1984) carried out a general practice study on 150 patients who had received extensive restorative treatment with a Dental Insurance System. 90% of crowns, and 80% of metallic restorations were rated satisfactory, with 23% of crowns rating excellent. It was observed that "When the distributions of satisfactory and not acceptable restorations were examined in detail, we found that ratings decreased as to the complexity of technical and clinical techniques increased. The metallic fillings, which involve almost exclusively intracoronal and direct techniques, showed 17% ratings. In contrast, pontics, which involve more laboratory than

intraoral techniques, received almost 50% ratings. Cast crowns, which involve intraoral and laboratory techniques in almost equal proportion, received 23% ratings, an intermediate position that may reflect the combination of techniques. The authors suggested that these findings supported the observation that "clinical, (compared with laboratory) dental procedures are demanding and difficult to perform consistently within the range of excellence". Restorations exhibited problems with overcontouring, secondary caries along the margins of the crowns, loss of margin integrity or loss of retention, and inflammatory reactions in the periodontium or oral mucosa adjacent to all overcontoured crowns and pontics. There was no correlation between the observed biological reaction and the type of alloy used to make the restoration.

Downer and O'Brien (1994) used a computer modelling technique to derive tentative evaluations of health gain (a positive outcome) from restorative procedures under two sets of assumed conditions. Utilising already published data the decision model allowed the influence of three variables (caries progression, diagnostic accuracy and the survival time of fillings) to be reflected in a sensitivity analysis, The conclusions suggested that under the parameters of the study, improvements in health gain would be achieved by raising the standards of current NHS dental practice in the UK. The authors nevertheless qualified this by stating that the model they had derived was a very simplified representation of reality and that the outcomes presented should be seen as no more than tentative approximations.

The quality assessment of the placement of dental restorations and the rationalisation of decisions for their replacement was addressed by an international symposium and findings published as *Quality Evaluation of Dental Restorations-criteria for placement and replacement* Anasuvice (Ed.) (1989) The essential objective was to link the clinical decision making process to existing available scientific data, hence eliminating any treatment strategy based on empiricism and the wide variation which could result. The proceedings are a valuable foundation of core criteria that can be used in standardising treatment decisions based on factors such as active versus inactive caries, low risk versus high risk individuals, a restorative versus a preventive approach, and durability of restorations versus the cost to the patient. The discussions highlighted the problem of assessment of data in the research literature that is compounded by the lack of clearly defined criteria which incorporate macroscopic and microscopic characteristics of the restoration surface and tooth/restoration interface, radiographic evidence of caries and

patient risk factors.

In contrast to tendencies within the profession to equate the overall quality of dental care mainly with the technical quality of treatment delivered, the scope of quality of care considerations in assessment strategies must be broad based enough to involve all aspects of patient evaluation, diagnosis, treatment planning and treatment that are likely to impact on the outcome of oral health care. A system that is deficient in this respect may disastrously misjudge overall quality levels.

An important, if not the most important, tool in dental quality assurance is the patient record when properly structured and maintained.

2. 6. 2. Indirect Assessment - The Dental Record

A number of workers have developed systems of practice assessment based on the use of explicit criteria to evaluate patient records, radiographs and study models. These methods can be used within the practice to be assessed, but this location is not an essential requirement for their application.

The examination of dental patients is considered by many to be intrusive and costly. and it is suggested that the overall evaluation of dental care can be accomplished more economically without examination of patients in most instances . Friedman (1972) recommends the correlation of X-ray diagnoses to treatment records, a review of post operative films, and an analysis of significant statistics such as the ratio of filled teeth to those extracted, and fixed bridges to partial dentures as the method of choice.

In a quality review of diagnostic data submitted to insurance carriers in Pennsylvania by Tannenbaum (1974) screening was achieved through radiographs, study models and comprehensive photographs of the oral cavity in the areas of operative dentistry(conservation), endodontics, prosthetics, periodontics and orthodontics.
The Pennsylvania Insurance Department and the Pennsylvania Dental Association co-sponsored this conference with the goals of -

1. Educating all participants in achieving quality in the programmes of dental care
2. The agencies and public make a commitment to essential quality.
3. A working relationship be established amongst the parties concerned.

A study to determine the quality of radiographs submitted to insurance carriers that were related to prior approval sought for various treatment plans was carried out by Bailit et al (1979) They correlated the relative importance of pre-treatment radiographic quality to the clinical decisions made by consultants with regard to the necessity and appropriateness of services. The most important variables influencing pretreatment decision making were the number of periapical films submitted for review and the density/contrast quality of the films.

Bailit et al (1980) also developed a programme of quality assessment for hospital based programmes in general dentistry at the University of Connecticut School of Dental Medicine. This system focused on the tasks involving dental staff judgment and expertise using explicit criteria. For half of the fillings approximately and half of the root canals , one quarter of the crowns, periodontal services, partial dentures and fixed bridges, assessors did not have enough information from radiographs to accept or deny the requested services. Therefore, the inability to evaluate services on the basis of radiographs alone presents a substantial problem to pretreatment review (PTR) protocols. The PTR system can be improved with an increase in number of the radiographs submitted. There should also be formal training.
The PTR, "in terms of quality issues, is at best a screening method and should be used cautiously was the conclusion. Radiographs are inexpensive and accessible,
but they do not achieve acceptable levels of agreement among reviewers about what constitutes necessary and appropriate care. The structure of the decision-making process requires assessors to either deny or accept the requested service.
Radiographs often alone contain insufficient information to assess the necessity of care.

An examination of dental records to determine the appropriateness of dental services was carried out by Marcus et al. (1979) at the University of California Information on individual patients' stage of care (e.g. non-use, episodic use etc.,) based on the services rendered was abstracted from the records and a quantitative data summary compiled. This was claimed to allow " dentists to improve the quality of their practices via management of information rather than through the imposition of restrictive norms or standards."

An evaluation of dental care provided to a patient group by looking at radiographs taken within the previous five years was undertaken by Demby, (1978). Patient records were assessed separately for medical history, extra-oral

examination, dental caries, periodontal charting, treatment planning and the presence of progress notes. The review was conducted in two parts - a direct clinical evaluation and an evaluation of the patient chart. The clinical evaluation was categorised into four parts - the technical area, the prevention area, the treatment plan and the summary. The completed evaluation was placed on the patient's chart. The patient first had bitewing radiographs taken, then the hygienist or oral health educator calculated the Plaque Index, finally the reviewer completed both parts of the audit. The "implicit" review was based on criteria that were internalised by the individual. "Explicit review" was based on criteria set or predetermined by group consensus.

Results between the two centres where the survey was conducted, varied little. The most common problem was a lack of a logical sequential treatment plan; incomplete charting of caries, radiographs inadequate for diagnostic purposes, lack of adequate evaluation and treatment of both periodontal and orthodontic problems. The technical proficiency of the dental work was however at least adequate and often excellent.

The problems of the explicit approach are to ensure maximum adherence to standards. Several expensive and perhaps ineffective items are included. For example, is it necessary to do routine culturing in endodontics? Second, criteria for decision-making are not commonly branched, making each step in the process not conditional on the previous step. Third, explicit criteria make assumptions that reflect a certain universality that may not be correct when most recent research is considered. The implicit approach is only as good as the knowledge of the process and explicit review for the technical component. It is "more flexible and efficient and less threatening to the dentist."

Bellin and Kavaler, (1970) discovered that 9% of a sample of private dentists in the New York MedicAid programme showed evidence of poor quality care. An examination of an equal number revealed discrepancies between the work performed and the services claimed to have been performed. "The work of a group of dentists who had billed the city for more than $500 000 in less than a year was of inexcusably poor quality and showed evidence of fraud."

The American Dental Association Council on Dental Care Programmes, (1975) urged those dental societies without review committees to establish them promptly rather

than await demonstrations of critical need, serious prepayment problems, or legislative mandate.

Soricelli (1971), said, "It is obvious that dental school faculties and/or administrations, as well as state board examiners, are not true to their own objectives; for we do find a sufficient number of licensed dentists who are by any standard unqualified to practice clinical dentistry and should never have been allowed to do so."

Friedman and Schoen, (1972) established a programme for evaluating the quality of dental treatment through an examination of patients' records and radiographs. They found that the determination of quality lay in the treatment recorded and the general evaluation of the practice and that the pattern of dental care could be assessed by an analysis of a single series of treatments, preferably the first one. This was a study of patient"s records (96 in one group practice and 49 in another) along with their radiographs, in order to develop a method for evaluating the quality of dental care received.

Categories of treatment were scored and patients' history, charting, radiographs prophylaxis, restorative dentistry, and endodontic management were examined. An evaluation of the type of procedure - completion, quantity, quality, provision for recall - followed. Categories of treatment were scored individually as were the individual features of the major evaluation. The total score was based on an average of subscores for the examination, treatment and type of procedure. Each series of treatment for each patient was scored separately in this manner and the average of the total scores for the series formed the final total score. The intervals between the series of treatments also were recorded.

Numerical values were assigned to qualitative judgments so that large-scale comparison could be made. It was established that

1. Everyone should receive a complete examination
2. All pathological conditions should be treated
3. Patients should be re-examined and treated at periodic intervals, ideally every six months.

Of most significance is the finding that the average scores for the total series of first treatments in both programmes were almost identical with their total scores. This

finding indicates that the quality of care provided in the first series appears to reflect the quality of care that is maintained over a period of years. Given a consistent approach to dental care, the application and acceptance of the same general principles, the same direction, and a degree of uniformity in the selection of the staff, (regardless of its stability), one should observe consistency in the level of technical quality of care.

Some of the findings indicated :

1. The evaluation of the patient's examination provided no determinant of quality

2. The determination of quality lies in the treatment recorded and the general evaluation of the dental practice

3. The pattern of dental care can be assessed by an analysis of a single series of treatments, preferably the first one, and

4. The interval of time between each series of appointments differed markedly in the two groups studied, but the changes in the natural dentition as the end-results did not appear to differ significantly.

Demby et al (1985) describe a system of evaluation which evaluates multiple levels of care, uses explicit and implicit methods, is outcome-orientated, includes educational aspects, and provides for immediate feedback to the dentist. "It should prove easily transferable to settings at the local or state level," they postulate.
They produce a reviewers manual and a sequence for the assessment process. There are four parts-

1 Oral Health Status
2 Dental Record and Radiographic Assessment Criteria
3 Clinical Assessment Criteria
4 Assessment of Treatment

The examination of oral health status is as a baseline for the subsequent parts of the review.. It includes the oral hygiene index, pocket depths and gingival index. Instructions for health measurement include, "how to place disclosing solution on the teeth when using a plaque light detection system. A series of photographs is included for further explanation. In the second stage the dentist assesses whether basic documentation exists that is adequate for patient management.

It provides the reviewer with indirect data based on explicit criteria to assess radiographs and dental records before moving on to look at the patient directly. In the third stage, the technical aspects of dental treatment are directly measured by

the reviewer against the definition of criteria set out by the study. These three stages are based largely on explicit criteria (ie acceptable or unacceptable)

In the fourth stage, the external reviewer uses guided judgment to review the dental treatment provided which involves an implicit approach. A list of pertinent considerations is provided in the manual as a guide for making a decision. The judgment of the acceptability of each criterion is based largely on the reviewer's evaluation.

Categories in the fourth stage are:- completeness of diagnosis, integration of non-dental considerations, appropriateness of treatment, logical sequence of treatment, patient's perception of treatment, summary, and summary of case management. The study attempts to take account of what was both practical and acceptable to the practising general dentist and what was important in maintaining the oral health status of the consumer.

The system "presents a unique opportunity to test through a variety of office settings with private practitioners, a system of quality assurance that looks at the process and outcome of care through treatment profiles, patient records and clinical evaluation. It offers: -

Ease of transferability

Reasonable cost

Ease of training reviewers

Outcome orientation combining both explicit and implicit review approaches

Comprehensiveness in scope

Emphasis is on appropriateness of care and the treatment planning process

Immediate feedback to providers

Educational intervention

Time element is short (20 Minutes)

Orientation to consumer with use of oral disability impact/patient satisfaction index.

Systems such as the above can provide an efficient and non disruptive means of quality assessment. Nevertheless dental records will be less effective for reviewing some technical aspects of care such as aesthetics, the fit of prosthetic appliances or

the adequacy of occlusal relationships. Direct assessment of the patient would arguably be needed for this but this type of review is costly in time and also more often perceived as more threatening and disruptive by dentists. The concept of direct observation of dentists and their teams at work and perhaps the examination of patients by assessors has been discarded by some workers as being "too expensive and unacceptable to most practitioners" Bailit et al (1974). Others such as Jerge and Orlowski (1985) consider that ".. if however all complications or inadequacies known to the dentist are documented in the notes and these are reviewed over longer periods then quite a good overall picture of technical adequacy is possible"

The essential item then for such method of review to be effective will be well structured records and adequate documentation of patient care. The slow move towards computerisation will no doubt have some impetus for an overall improvement in record keeping. Helburn (1984) Although good design of the record and good record keeping on behalf of the practitioner do not ensure the adequacy of care, they provide an excellent opportunity to evaluate it which poor records do not. In many systems, both corporate and capitation based, in other countries the burden of responsibility is with the provider of care to demonstrate acceptable levels of quality through well documented patient records. The relationship between adequacy of care and the standard of record keeping has been examined particularly in medical care and the more compelling of these studies show a positive relationship between the standard of record keeping and the quality of care. Long & Rogers (1975) Lyons & Payne(1974). Many additional accuracies are available however by direct observation and assessment.

2. 6. 3. Direct Assessment

This implies the observation of the practice environment and the whole dental team at work treating and managing patients, in order to measure performance. Precedents, albeit a few only, again have been set with previous studies carried out in general medical practice in the UK. Collings (1960). No attempt has been made to date in general dental practice to observe, document, and score dental teams during the delivery of care to their patients.

Probably the most widely distributed assessment in this category carried out in general medical practice in the UK was that of Schofield and Pendleton (1985).

Their pilot trial defined several criteria:-

1. Each visitor was asked to rate the degree of achievement of each criterion on a four-point scale, separately, to evaluate inter-market reliability.
2. Visitors were asked to complete a form commenting on the aspects of the visit.
3. Doctors are required to rate the validity of assessment criteria
4. Doctors are invited to comment on the visit

Answers to the specific questions were listed under acceptability, criteria, methods of assessment, and value of the visit. The authors ask if the areas of performance and criteria are those that the majority of doctors and their patients accept as crucial to the provision of good quality care. Is the method of assessment valid and could it be improved? Are practice visits an effective method of maintaining doctor's motivation and identifying the strengths and educational needs and producing changes in practice? How can such an innovation be introduced into the existing structure of general practice?

Preliminary discussion covered several issues. There were four areas of performance - professional values, accessibility, (availability of the doctor to the local community), clinical competence, and ability to communicate. Criteria were defined. For example, does the doctor see himself as providing a service to his practice population, sharing with others the responsibility for promoting, preserving, and restoring the health of individual patients, and on the negative side, does the doctor regard medical practice as a way of earning a living or of encountering interesting clinical material. What is the acceptable level of performance bearing in mind the type of practice.
A method of assessment comprised, -

1. A study of the practice profile
2. Direct observation of practice premises
3. Discussion with ancillary staff and other members of the practice's healthcare team.
4. Inspection of clinical records
5. Review of videotaped doctor's consultations
6. Interview with the doctor to elicit his views and understanding

The working party identified several areas of definition problems The survey depended on specific criteria, but it is stated, "they were also complex and comprehensive and it is difficult for individuals or groups to discuss them in detail, particularly without the experience of using them in practice".

The meaning of standards was difficult to decide. "Unless the intended meaning is clearly defined, we believe that it is best to avoid this word and use the term "areas of performance" to describe the broad areas to be assessed and "criteria" to define the more specific areas. Measurements and judgments should be confined to the specific areas being assessed and reports and recommendations must be both acceptable and achievable.

Doctors must be provided with feedback that emphasises the doctor's strengths on which he can build, to reinforce desirable behaviour, and to suggest options that the doctor might wish to consider.

Morris et al (1988) in a 4.5 year study funded by the Kellogg Foundation developed a method to assess the effectiveness, efficiency and quality of general dental practice. The development of an objective, practical and professionally acceptable method through in-office visits was carried out at the University of Pennsylvania.

The assessment instrument table of contents was divided into three general categories according to the dimensions previously used to evaluate medical practice, suggested by Donabedian. In the category of 'structure' were included facilities, equipment, personnel, and administration. In 'process' were divided the categories of practice management, radiographic evaluation, data collection, diagnosis, treatment plan, treatment, sterilisation & infection control, patient management, and under 'outcome' the areas looked at were patient satisfaction, patient oral hygiene, patient education, patient disability, periodontal disease, completion of treatment, and recall.

Three-day training sessions were carried out in the use of evaluation methods such as simulated office visits, examination of patients, reviews of records, interpreting questionnaires and assessment criteria. Analysis of the percentage of comparability was used to establish levels of calibration. Evaluators were all well-trained in procedures and protocols.

In a sample of 300, 21 or 22 offices were required from each state. To test and evaluate the assessment method in the major types of contemporary practice, 50 of the 300 practices represented rural areas. 50 of the remaining rural urban practices

were group practices.

The number of practices participating was narrowed down by preliminary research involving letter requests, follow-up telephone calls and scheduled visits.
Although it was not possible to actually obtain a truly representative sample nevertheless the principle was pursued. Sample target areas were selected specifically with the object of saving time and money.

In the third and fourth years of the project the evaluators then tested the assessment instrument in 300 geographically distributed offices. An average of three visits per week were conducted during the 24-month period. A carefully planned procedure preceded each visit to the practices which had agreed to the evaluation visits.

1. A phone call to establish a convenient date
2. A letter specifying what would be required during the visit and requesting the return of a pre-visit form providing demographic information and office characteristics.
3. Ten days before the visit - a copy of an assessment instrument coded with the office number and the pre-visit form were mailed to the evaluator
4. Three days before the visit a phone call to the host dentist confirming the schedule and preparations

The visit itself consisted of a short orientation meeting with the dentist and members of the office staff before arrival of the first patient. The schedule of the visit followed the format of the instrument for calibration, with priority consideration being given to patients. Evaluators, comprising several for each practice, travelled from various geographic regions. This ensured that judgments reached were neutral and not simply reflective of the locality. Average time for the visit was 6.2 hours. Disruption was minimal. 41 dentists considered most disruption to be caused by examination of records, 36 with restorations, 13 in dealing with the dentist, 6 for the effect on working space, and 5 by radiographic examination. Of the cadre of ten evaluators, one reported that his practice had been severely disrupted, six said the project was somewhat disruptive.

Their general reaction was positive. Two evaluators reported enjoying it. Four said they enjoyed it very much and four regarded it as one of their most rewarding professional experiences.

Barish and Collins (1974) conclude that the proper balance between preclinical and clinical teaching that must be maintained in a dental college has never been adequately documented or defined. Nevertheless, they believe that the "dental profession eventually will accept peer review as a matter of course because, in a small but ever-increasing way, it is currently in use.

"The quality of dental treatment is peculiarly difficult to evaluate because we have combined both a science and an art. In dentistry, the most searching and scientific diagnosis of a dental health problem may permit a variety of ethical treatments. Such solutions in a typical private practice necessarily may be less complex than those the dentist wishes to offer because of the financial limitations or even the indifference of his patient."

With specific reference to the process of direct assessment, they state, "The treatment plan may include selected procedures along certain mechanical lines in which the dentist feels more confident of his own skill. At worst, the treatment plan of an unethical dentist may be one deliberately chosen to generate the highest profit."

Personal opinions also present a problem. They produce, "an endless shading of judgments." However, even though "judgment of treatment quality is a matter of professional uncertainty from the beginning," they are optimistic that "the development of standards for peer review should not be a great problem because several plans have been suggested."

They refer to the limitations of a treatment plan. "A treatment plan that might be considered acceptable by a panel of dentists who review the decision of a practitioner may be considered unacceptable by another panel. Indeed, long before the first operative procedure is begun by a private practitioner, the die is cast by his treatment plan."

After acknowledging these problems they discuss the "critical point" of how a review of private practice should be set up, the function of such a review and finance itself.

The state or regional board of dental examiners would appoint committees that would have cognizance over particular geographic areas. Members would be

chosen on the basis of established excellence in their practice or the successful completion of a brief course and examination set up by the appointing organisation.

The peer review committees would review the dentists who were not subject to some other periodic review process. It would be publicised by the state organisation in its professional journal and in the lay press. A regular system of review would be set up, including advance warning of specific criteria and an examination by the review team of records, treatment plans and radiographs.

Dental Practice Acts would be amended, and there would be a right of appeal to the state society or board of examiners whose decision would be final.
The review system would comprise several stages:-

1. Review records, treatment plans and radiographs of a cross-section of patients covering various functions of the dental practice by a team of reviewers.
2. If the findings are not conclusive a second team of examiners will be called in.
3. The dentist will either obtain a letter of approval or with his consent, the patient would be requested to appear for an examination by the practitioner and reviewers.
4. If the team disagreed with the patient then this decision would take precedent and the dentist would receive a letter of approval. But if the teams agreed on the deficiencies then they would be brought to the attention of the practitioner.
5. If the deficiencies were not corrected in the time allotted the review group would recommend remedial or disciplinary action
6. The dentist has a right of appeal to the state, society or board of examiners and their decision would be final.

Review expenses would be paid from the practitioner's annual dues to the state society or from the licence renewal fee.

Olson and Chetelat (1979) examined the difference in standard of treatment between a capitation and fee-for-sevice programme. They state, "Capitation programmes place the dentist in the position of underwriting losses when utilisation is higher than anticipated. The dentist can either absorb the extra cost, perform fewer services, or use less expensive materials. This means the overall scope of patient care may be narrower."

"When the element of dentist risk is removed under the fee-for-sevice approach, practitioners are more likely to perform work in keeping with higher professional

standards and provide more comprehensive care. Overall, the comparative value of all services provided to fee-for service patients was 47 per cent greater than the value of all services provided to capitation patients."

"It is logical to conclude that these differences result from the conflicting demands placed on the dentists by the added element of assumed risk under a capitation programme. Although the comparative value of routine services provided to fee-for-service patients was 12 percent less than the value of routine services provided to capitation patients, the value of extensive services provided to fee-for-services patients exceeded the value of all services provided to capitation patients by 11 per cent."

Morris and Bohannon, (1987) tested a quality assurance system for application to dental practice conditions . The object of the study is not geared to measuring the quality of treatment directly. The study concentrated on the evaluation of the way dentistry is practised rather than the way it should be practised.

Three main issues were addressed.

1. The components of private general practice that can be associated reasonably with quality of practice.

2. Methods through which these practice components can be evaluated practically and effectively.

3. The relative importance of these components in assessing quality.

The study looked in particular at the standards of dentistry among recent graduates and it concluded that "many graduates ignored what they were taught and emulated their established professional colleagues. "The data from this study suggest that a wide gap exists between the way faculty believe dentistry *should* be practised and the way it is in fact practised."

"Do teaching clinics segregated by discipline benefit students and patients, or do they serve the convenience of the faculty? Is good patient care enhanced by the record systems of most dental schools or do the records serve the teaching convenience and eccentricities of the faculty?"

Bellin and Kavaler, (1970) targeted 6000 patients who were part of the Medicaid programme. Their philosophy was that "...health departments must audit the quality of professional services purchased from private health care professionals." The Medicaid organisation views the recipient of care as, "the ultimate source for evaluating quality of care."

Over 6000 letters were sent to Medicaid patients who received private dental care, inviting them to come to branch offices to have staff dentists assess the quality of their care. Of the 6000 patients 1300 responded and were examined, 120 patients showed evidence of poor quality dental care. Similarly, about 120 patients revealed discrepancies between the work performed and the services claimed to have been performed.

The authors state "it is important to reiterate that the 1300 examined patients cannot be considered a random sample as they were a self-selected group. Therefore, we cannot apply the finding among this group of 18 per cent questionable care to the entire programme. Rather we estimate that poor quality dental care plus alleged fraud would be in the range of 5 per cent to 10 per cent." In 1968, the New York Medicaid auditing programme for Medicaid, at an overall cost of $681 475 saved a total of $27 398 737.82. Every dollar invested in auditing saved a total of $41.
The conclusions are made that "...over utilization in terms of unnecessary fillings, extraction or use of general anaesthesia has been minimised through professional review of pre- and post-treatment radiographs, and through restriction of general anaesthesia to qualified specialists. Review of pre-- and post-treatment x-rays in all cases with fillings costing over $100 or with fillings or extractions in deciduous teeth around the time of expected exfoliation, has produced additional savings."

The paper concludes that quality assessment and assurance ultimately has four objectives in the Medicaid programme

1. To assess the quality of healthcare in accordance with standards stipulated by the health department

2. To ascertain where there is over utilization or underutilisation of services perpetrated either by the practitioner or by the patient

3. To identify fraud

4. To educate practitioners and recipients in the appropriate use of publicly funded healthcare programmes

"Professionals working for the Health Department and directly accountable to government remain the professional peers of the practitioners they audit. One cannot audit oneself dispassionately. Objective evaluation demands isolation of evaluation from operations. Judgment by competent peers remains the ultimate evaluation, so that the alleged paucity of norms is not catastrophic. Norms will develop as programmatic necessity demands. In the meanwhile, concentrating auditing activities first upon the quality of high volume practitioners can locate a profitable yield of abuses."

The Medicaid organisation concludes, "with the proviso of safeguards to preserve confidentiality of records and to protect the doctor-patient relationship, we insist that health departments must audit the quality of professional services purchased from private healthcare professionals."

Weinstein (1978) in a study of dentists attitudes to patients perceptions of the quality of care, selected 105 dentists out of 224 volunteers - 65 to have their care reviewed by colleagues as peer review, and 40 to review their own care in self-assessment.

Patients on both peer-review and self assessment offices were selected by project staff. Interest here was to obtain patients with a variety of types of restorations. A selection system was used to standardise selection as much as possible and to over select for crown-and-bridge treatments. There were 986 patients from the peer review offices and 480 patients from the self-assessment offices. All dentists completed a brief seven-item yes/no questionnaire for each one of their patients to be recalled.

Perception questionnaire findings confirmed that dentists see their patients as co-operative. But dentists also perceived a number of problems with their patients, that is, dentists perceive some difficulty in getting patients to accept and pay for optimal treatment, and to perform adequate home care or follow other out-of-office recommendations. Significant but modest correlations between DPP items and measures of quality also may indicate that dentists provide a higher level of restorative services to patients who seem to appreciate dental care and a lower

level of care to those who are perceived as being not as appreciative.

Weinstein (1979) in a later study similar to the above to assess patients values of quality selected 105 dentists for evaluation.

Patients were selected at random by the actual patient file of each practice and charts identified of patients at least 13 years of age and with restorative treatment in permanent teeth completed by participant dentists in the last year. To obtain a variety of types of restorations, a standardised selection system, with points assigned to each restoration in a a given chart was utilised.

It was concluded that patient dental values are related to both oral health and the quality of restorations. Moreover, patient-reported compliance with dentist home care recommendations showed the strongest relationship to this set of dependent measures. This finding again appears to suggest that dental value items that have a behavioural component are best related to dependent measures. Though it is intuitively clear how patient value orientations may serve to influence oral health measures, the nature of the relationship between patient dental values and the quality of restorations is not apparent. it is hypothesised, as perceptions of patient and dentist were found to be remarkably similar that patient values may be communicated directly and indirectly to the dentist. Patients who choose optimal treatments, present no obstacles or stresses to the dentist during treatment, and seem to be aware of and profess to follow home care recommendations, may provide additional evidence. Patients with these positive attributes appear to be a pleasure to have in a practice and these relationships may result in better care.

The authors concluded: "In a similar way the cascading effect of unmotivated patient values leading to an unclean mouth and then to less cooperation with dental personnel, greater needs and poorer treatment seems possible unless broken by particularly skilled dental staff. Such a result, again, restates the underlying behavioural nature of successful treatment. In addition, this is consistent with our findings that it is technically more difficult to restore more extensively broken down teeth and thus there are more technical failures in these situations."

Ballit et al,(1974) in a study to develop standards for the quality assessment of dental care established a dental committee consisting of practising dentists and decided that the criteria for the study should be "normative in that they are oriented

to what the average dentist should do to provide adequate care."

They proposed the use of the "tracer" method which assesses specific areas of treatment and assumes that there is a common approximate level of care. Criteria for common conditions of dentistry were prepared and then areas of treatment specified. The process of treatment was divided into the components of quality of the history and examination, second - the diagnosis, third - the treatment plan, and fourth - the treatment.

However, it was later decided not to include a diagnostic phase of evaluation because, "it is almost impossible to obtain direct evidence on diagnoses and that quality of the diagnoses is covered to some extent in the treatment plan assessment."

Three methods to define the areas of patient care that could be evaluated, were:- the observation of the dentist, record audit, and patient examination.

Observation of the dentist whilst he was treating the patient was considered a too expensive method of treatment "and probably unacceptable to most practitioners."

For the examination of the patient's treatment history there were five major elements identified: a description of the present illness, personal history, past medical history, past dental history, and dental examination.

The treatment plan separated the evaluation of the treatment from the actual treatment .The criteria for the treatment plan assessment were:- personal medical, extra-oral tissues, preventive services, restorative services, intraoral soft tissues, periodontal services, occlusion, and sequence of treatments. For the fourth stage of evaluation of the technical quality of treatment, the development of specific criteria was limited. For example in the treatment of the periodontium, "in a period of several months after treatment, the tissues can return to their previous state for reasons that may be independent of the dentist's therapy."

To measure the criteria both quantitative and categorical scoring systems were developed. The three-point scale ranged from unsatisfactory to superior. This was later amended to two grades only. Relating to the assessment of specific criteria,

confusion arose if the dentist had to meet specific criteria in several treatment areas. In this case, a satisfactory score was assigned to the treatment only when the dentist used the correct form of treatment in more than 90% of the cases.

Multiple criteria were developed for specific components of care. For example, for the use of restorative materials, criteria related to the material's biological effects on pulpal tissue, strength, and aesthetics. A five-point categorical scale was also devised to provide an overall rather than an item by item, measure of quality. Researchers with a non-dental background investigated the patient's history. This ensured that treatment decisions were not solely based on the appropriateness of treatment but also on the amount of detail in the record.

Three other assessors who were dentists, one from the dental school and two from the community, were trained as assessors to then evaluate the treatment plan and treatment.

Not all of the foregoing studies were related to general dental practice. Certainly in the UK during the last seven or eight years or so there have been some significant developments and the role of audit and the spectrum of quality assurance procedures has gained some momentum.

2. 7. General Dental Practice Developments

A revised contract with regard to the terms of service for dentists in the NHS General Dental Services was introduced in October 1990. Preliminary data from the Dental Practice Board in the months following the introduction of these changes indicated a high take up nationally by practitioners and patients alike of the concepts of capitation and continuing care. In London and parts of the South East of England however there is evidence of selective acceptance under the NHS and an increase in the provision of private dentistry.

Despite much rhetoric about the relative merits of different systems of dental practice available in the UK (- NHS, Private, Independent etc) very few if any comparative studies have been carried out to survey these services and assess the standards of dental care provided to patients by differing methodology and philosophy.

Statistics from the Dental Practice Board show large amounts of treatment in the form of interventionist and reparatively based technology being carried out by all age groups of practitioner. (Dental Practice Board Annual Reports 1991-92, 1992-93) . It is evident from these figures that prescribing patterns can be predicted fairly accurately in the GDS on the basis of dentists age, sex, and geographical location. The still mainly item of service fee structure of the GDS and the levels of funding available should by this same hypothesis limit quality.

In private practice, either fee paying or otherwise, the patient and the dentist are in the main the only parties to the treatment decision and the level of payment should accurately reflect the relevance and quality of the service. There will be none of the above restrictions and the overall standards of care could therefore be expected to be higher.

There is large opinion in some quarters that in any event the delivery of dental care in the UK is based on a false premise and interventionist philosophies. (Sheiham 1977, Sheiham et al. 1985). Where prevention and behavioural modification are prioritised it is postulated that dental diseases can be more effectively and less expensively controlled . (Plamping & Sheiham 1990)

In 1979 the development of a postgraduate diploma in general dentistry based essentially on stringent peer review criteria to achieve examiner consensus (the MGDS RCS England) has progressed ideas for a measurement of excellence in general dental practice. The establishment of the Faculty of General Dental Practitioners(UK) and the setting up of the Diploma in General Dental Practice has further contributed to recognition of quality standards. Wide acceptance by dentists of the principles of audit has still to be achieved however. This despite the fact that quality assurance through audit has already been implemented extensively in hospital and general medical practice.

Patient satisfaction has been generally accepted as an important element of quality of care. This involves far more than a demonstrably high level of technical and clinical competence on behalf of the dentist (McDougal 1984) . Dental care 'consumers' nevertheless are hard put to evaluate the ability of the dentist and the appropriate nature or otherwise of the professional procedures rendered (Kress & Silversin 1985).

The current challenge to develop a suitable system of quality assurance based on reliable criteria of care led to a number of developments. The General Dental Services Committee of the British Dental Association (1991) published a booklet *Peer Review in General Dental Practice* which was funded by the Department of Health and explained in fairly simple terms the purpose of peer review as a quality initiative within the NHS. The systems therein had been piloted by members of the GDSC Education Sub-Committee in their own NHS general dental practices. This was really designed to pave the way for further initiatives on quality from the Department of Health (1991)who were later to publish *A pilot peer review scheme for general dental practitioners* which introduced a pilot scheme under which groups of dentists from a common geographic area could apply for funding to carry out peer review projects based on various areas of practice activity. The scheme's main objectives were to:

- Encourage dentists to examine ways of improving further their services to patients
- Test the effectiveness of various types of review.

Local assessment panels in each region would consider projects submitted by groups of dentists and decide whether the allocation of funding would be worthwhile.

The early nineties saw an upsurge in activity with regard to methods for implementing quality assessment and assurance in general dental practice. In a leading article in the *British Dental Journal,,* Seward(1991) said, in relation to the multi-sourced Working Group on Audit, (1991) "the members of the group clarified the minefield of terminology and then went on to set out preliminary ideas for wider discussion. What exactly is clinical audit and will it work? The preliminary ideas for wider discussion were seen as the first step of a consultative process before getting down to consider in more detail how to fund audit and, equally as important, whether the profession wants it? However, the Working Group did address the question, 'Are clinical audit and peer review the same?' "

The paper continued, "It is at this stage that the Self-Assessment Manual of Standards,(SAMS), launched on September 26, 1991,will come into its own. Above all it is not a stick with which various authorities can beat the profession. To improve patient care, guiding principles and generalisations are not enough. SAMS however is not an almighty tome written on tablets of stone... This first edition, if used with courage and innovation, has the potential of being one of the most successful forms of personal self-development for dentists in general dental practice yet devised."

In spite of such positive promotion this work , in the main, met with outrage from NHS practitioners. "It is impossible to overstate the irrelevance of the concepts [of QA] to National Health Service dentists it is one of the most sterile and patronising measures imaginable" (Frazer 1992) "There is no way that any practitioner working to the existing NHS fee structure can achieve the standards laid down in this manual which makes the whole exercise clinically both frustrating and pointless" (Shoolman & Szasz 1992)

The Department of Health again funded the publication of *Clinical Audit - a Workbook* which was prepared for the Working Group on Audit in Primary Dental Care jointly by the British Dental Association and the Faculty of General Dental Practitioners(UK)(1993). This is an excellent resume of the meaning and purpose of audit and its place in improving patient care. It explores the theory and method of audit, looks at potential difficulties when applied in general dental practice and includes various introductory exercises. The workbook has five sections:

1. Concepts - a review of ideas underlying audit and quality management.

2. Measuring tools - suggestions on how to examine practice activities and find the quality components.

3. Data handling tools - Basic statistics and data management.

4. Post - audit conclusions - making changes to elevate quality.

5. Exercises - Suggestions and ideas.

Others were stimulated to search for existing formal quality audit systems that had found application in industry and modify them for use in dental practice. One such system is that of BS5750 and/or its international equivalent ISO 9000. These standards were first applied to general dental practice by Sanders (1993) and comprise twenty areas where a production process many be specified and a protocol defined for checking that the specification has been met. A number of other practitioners have since embarked on the application of this standard to their day to day practice.

Templates for acceptable standards in practice within the NHS are applied by the Committee for Vocational Training to aspiring trainer practices and also by Family Health Service Authorities in reviewing acceptable standards in practice. The private sector however has remained a particularly barren area in this respect. A system for quality assessment and annual quality assurance and review comprising initial visits for accreditation and then later for yearly appraisal have been incorporated into the recently launched (October 1993) new BUPA Dental Cover Scheme for private practice which is most certainly the first attempt in this country to achieve consensus standards for capitation system funded private practice - or for *any* method of private practice for that matter. Previous capitation payment funded systems - whether controlled by the state or private enterprise- have been open to accusations of being a charter for "supervised neglect" Which flourishes sadly in an environment where the is a lack of, or in many instances a total absence of, any form of ongoing quality assurance.

2. 8. SUMMARY

The foregoing literature review has outlined the issues of relevance to the assessment of quality standards in the delivery of oral health care in general dental practice that have been considered to date and the studies carried out in various countries in the assessment and assurance of quality in this context.

Various methods of assessment and measurement that have been utilised historically to maintain quality and contemporary techniques for audit of standards have been considered in various formats.

The study of the available literature indicates that such information has not been reported in relation to general dental practice in the UK, and actual quality standards that exist and prevail in private, mixed and NHS practices are unknown and have not been measured overall or individually against standards of current good practice. A need to look at the problems that are likely to occur in developing such a method and its implementation is apparent. This study will address these topics.

2. 9. AIMS

A Study was set up with three principle aims.

Firstly, to find out whether it would be possible to set up an appropriate assessment instrument that would examine standards of care in NHS, Mixed and Private sectors of General Dental Practice.

Secondly, to evaluate the feasibility of, and practitioner attitudes to , applying such an assessment instrument in all types of General Dental Practice.

Thirdly, to determine whether differentials in standards existed amongst types of General Dental Practice in the UK as assessed by the instrument

Chapter 3

METHOD

Chapter 3

METHOD.

The project method was to develop and utilise a suitable assessment instrument for measuring standards in different types of dental practice and modify this as appropriate after a short pilot trial before starting the main project. Similarly a patient questionnaire was set up for use as a template for patient interviews and/or use by patients as a self assessment tool. This was modified before being incorporated in the main project.

3.1. PHASE 1 - Preliminary planning.

3.1.1. Development of the assessment instrument and questionnaire.

At an early part of the study the assessment instrument was derived by utilising criteria from work by the California Dental Association,(1981); Reports of consensus committees such as the American Dental Association Councils on Dental Materials; Instruments and Equipment; Dental Practice;Dental Therapeutics; (1988) and the United States Department of Health and Human Services, Public Health Service Food and Drug Administration(1987); The literature on the appropriateness and efficacy of different treatment (American Dental Association 1981 and 1982);Systems developed by others such as the Dental Foundation of the University of North Carolina and reported by Morris et al(1988); The Committee for Vocational Training; The Self Assessment Manual Of Standards of the Advisory Board in General Dental Practice, Faculty of Dental Surgery, Royal College of Surgeons of England(1991); The Working Group on Audit of the British Dental Association and the Faculty of General Dental Practitioners (UK) (1993); The Education Committee of the General Dental Services Committee of the British Dental Association (1991) and BUPA DentalCover (1993). In addition an informal consensus panel of six general dental practitioners made up from all categories of practice served to provide continual input and modification in the format of a Delphii exercise until the final format of the assessment instrument was achieved.

The assessment instrument was multi - faceted and essentially structured to assess:

- Clinical quality
- Efficiency and quality of the delivery system
- Administrative and business aspects of the practice
- "Customer service" - a contemporary term taken to mean the level of people skills in dealing with patients in the practice and the level of satisfaction perceived by patients of the practice following their treatment visits.

The method comprised personal interviews and questionnaire information from

- The principal dentist or partner/s in the practice
- The practice business manager (where appointed)
- The reception staff
- The treatment room support staff and auxiliaries (DSAs and hygienists)
- Patients of the practice

The protocol for the practice assessment and the information to be sought by interview and observation was outlined by current good practice standards reported in the literature and set out by some of the contributors listed above.

The most legitimate approach to comparing standards of care is based on data related to structure, process, and outcome as originally described with regard to medical practice (Donabedian, 1966) . These ideas were later adapted well to dental practice (Bailit, 1974) Others have more recently analysed the broader aspects and parameters of quality in general dental practice (Sheiham, 1990)

The assessment instrument for this study comprised many parts all of which are considered to be of importance to the quality of dental practice. (APPENDIX 4) Some factors are more important than others. Previous workers at The Dental Foundation of North Carolina, UNC School of Dentistry by the use of a Delphii exercise have established a consensus amongst a professional group regarding which components are respectively, very important, important and less important in this respect. (Morris, et al 1988) The assessment score requirements should be firstly derived in the largest proportion from the dimension of *Process* and the remainder equally from *Structure* and *Outcome* . In this project the relative contributions to the totals were 54.2% / 22.5% / 23.3% . Detailed analysis of the various elements to produce comparative data based on the different types of practice and other criteria was also possible.

The following areas were examined.

STRUCTURE - related to a revision of facilities, equipment, and organisation that are evident, and to the training, qualifications, numbers and attributes of personnel available for patient care.

A) Facilities -

- Practice setting
- Reception area/waiting area
- Business office
- Radiographic facility
- Treatment rooms/modules
- Support rooms/areas
- Traffic flow

B) Equipment-

- Sterilisation
- Radiography
- Treatment rooms
- Instruments
- Treatment support
- Practice support
- Patient support
- Hazard control

C. Personnel

- Numbers-patient care
- Numbers-administration
- Training
- Hygienists
- Appearance
- Demeanour
- Longevity
- CPR
- Continuing education (staff)
- Continuing education (dentists)

D. Administration

- Patient records
- Patient support system administration
- Administration staff protocols
- Materials for patients

PROCESS - dealt with what the dentist and his/her team actually do in the delivery of care and included all aspects of management from history taking to the technical procedures of treatment.

A. Practice management

- Reception/Appointment control
- Appointment book
- Personnel management

B. Sterilisation/Infection Control

C. Radiographic evaluation

- Organisation
- Diagnostic value and technique

D. Data Collection

- Organisation of patient records
- Legibility of records
- Completeness of records

E. Diagnosis

- Carious lesions
- Periodontal Disease
- Bony pathology

F. Treatment plan

- Sequence
- Completeness

- Appropriateness
- Implementation

G. Treatment

- Restorative
- Endodontic
- Periodontics
- Oral Medicine

H. Patient management

OUTCOME - addressed the status, benefit, knowledge and satisfaction of the recipient, the patient.

A. Patient satisfaction (The perception of the 'patient experience" in all its facets, treatment, staff demeanour . welcome, costs, dentists manner etc)

B. Patient Oral Hygiene (Ameasure of how effective oral hygiene and dietary counselling have been, also current oral health status)

C. Patient disability (A measure of the disruption caused by unstable oral health in terms of hours lost from dental emergencies and their management)

D. Patient recall (An important facet of the outcome of treatment is its maintenance through an effective recall programme structured on an individual basis)

Information on such standards of "customer service" and satisfaction (Outcome) was obtained by either interview with 10 patients attending the practice and randomly available during the assessment visit, or by a similar number of patients completing questionnaires laid out in a clear, quick to answer format (APPENDIX 5) and returning them anonymously via the mail in prepaid and addressed envelopes.

3.1.2. Pilot of the assessment instrument and questionnaire

This was carried out at the six practices of the practitioners who made up the consensus panel. These comprised two practices of each of the types making up the total sample practices in the main study (NHS, Mixed and Private). The principal dentists were briefed and had briefed their teams as to the nature of the pilot and

what would happen on an assessment visit.

The pilot enabled minor amendments to be made in content and format of application both to the assessment instrument and also to the patient questionnaire both as a result of feedback at these pilot visits and also regulations introduced after the initiation of the study.

Assessment instrument.

- Additional categories were added and others modified to incorporate the current legislation and updated requirements of UK practitioners with regard to areas such as

    1. Control of substances hazardous to Health (COSHH)

    2. Insurance and Licensing- Occupiers liability Act, Employers Liability, Pressure systems and vessels, and Laser Regulations.

    3. Display of Health and safety documents and posters.

    4. The method of scoring practices was made more detailed

- The observation of dentists and their teams at work and compliance with correct protocols during the delivery of care in clinical areas was best achieved by being carried out also by a senior tutor dental surgery assistant This auxiliary was also active in teaching clinical general dental practice methods and employed in private practice on a part time basis. She was perceived as less threatening by dental teams and was utilised throughout the project to deliver consistent evaluation standards for assessments in liaison with the main dentist evaluator.

- The "check list' approach was considerably reduced as both personnel involved in assessments discovered that many aspects of non-clinical information particularly with regard to reception and business office protocols could be obtained through informal interviews with practice staff during the process of patient management.

Patient Questionnaire

The patient questionnaire was tested for content, layout and ease of completion at the pilot practices and also on a number of patients (223) attending the Maurice Wohl General Dental Practice Centre where it was concurrently used- with some minor modifications - as a survey of patient satisfaction with regard to student treatment. These trials highlighted the need for some further simplification , the modification of the wording of some of the questions, and better division into appropriate sections of the content. The final format of the patient questionnaire is presented in APPENDIX 5

3.2. PHASE 2. Main Study

3.2.1. The sample group

To obtain a sample group, an introductory letter written in general terms and a questionnaire(APPENDICES 1&2) was sent to 513 practices in Inner London. The target group for this initial mailshot was obtained from bodies representing the different types of practices it was hoped to eventually sample:

FHSA listings

The BDA Private Practice Group

The BDA Independent Practice Group

The Denplan Organisation

From the information contained in the 211 (41.1%) returned preliminary questionnaires, 49 of these practitioners (8%) described their practices as not falling clearly into the above categories. This is the so called "mixed" type of practice which is either

1. A practice that carries out a selective portion of treatment under the NHS and the rest by private contract which may be either fee for service or capitation based

2. A practice where some personnel work only under private

contract,either on a fee for service basis or under a capitation system, and others almost entirely under the GDS contract.

This "mixed"category of practice will also be examined in the study as it should theoretically be possible to relate the results to the varying levels of the different methods of practice.

The questionnaire was structured to provide information about each particular practice that would allow categorisation into private, mixed or NHS practice (See Appendices 1& 2). Those dentists that replied, after separation into the groups based on their practice profile were sent a further letter which explained the purpose and method of the study and informed them that further contact would be made by telephone in the near future.

The objectives of the telephone call were

- To set up a visit for assessment

- To log dentists attitudes towards a study that involved observing them at work during the delivery of care.

- To provide participating dentists with further information as appropriate.

The telephone contact was carried out by a female research assistant skilled in telephone techniques and with substantial experience in dental practice administration working from a scripted outline (APPENDIX 3). These attributes resulted in a high level of acceptance (53%) of the next stage of the study. Some practitioners however perceived the proposed assessment visit as threatening and intrusive, and the consequence was then a total withdrawal of cooperation. The reasons given for not proceeding were analysed. A total of 112 practices willing to participate was however achieved . These practices were visited and assessments gradually undertaken. As each visit was completed scores were entered into a computerised database which totalled the scores for the individual elements of each dimension , sorted and presented them in tabular format for each category of practice. The results were then transferred to a second software database for the purpose of producing bar graphs and tables to illustrate and analyse the results.

Chapter 4

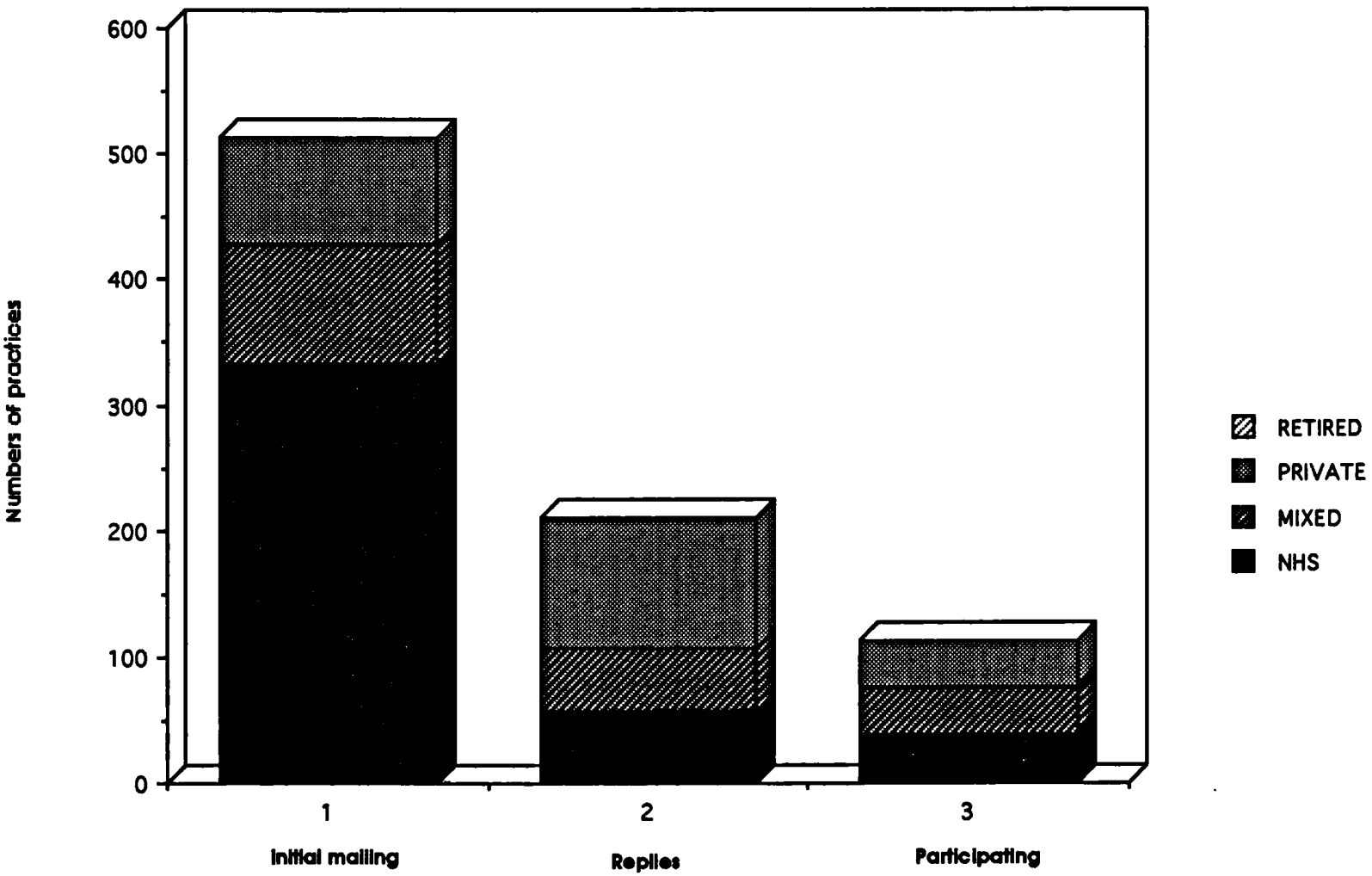
RESULTS

Chapter 4

RESULTS

4. 1. The Sample Group.

The introductory letter and questionnaire (APPENDICES 1& 2) were sent to 513 practices in the London Area drawn from the information bases described earlier. Of the 513 sent, 211 were returned (41%). Returns appeared to be poorest amongst NHS practitioners who comprised 65% of the mailing but only 27% of the returns. The response to the mailing and the eventual participation by practice categories is shown in **FIG 1.**



Response to mailing

Fig 1

Reasons given by practitioners who had agreed to participate in the study for not proceeding when telephoned are shown in TABLE 1

TABLE 1

Reasons given by practitioners for refusing a practice assessment visit

REASON	% OF SAMPLE (n=99)
Far too disruptive for patients/staff	38
Did not like idea of another dentist observing	27
Practice is too small to fit everyone in	9
Expecting decorators/plumbers any day now	4
New computer system due to be installed.	1
Receptionist just left practice so not organised	8
Without a DSA so not most efficient - try later.	1
The observer (KM) would expect standards that were not possible in the NHS.	8
Principal away, practice manager would not schedule date	3
No reason given, call terminated	1

The numbers and types of participating practices are shown in TABLE 2.

TABLE 2

Participating practices by practice type.

Type	No.	%
NHS	38	34
Mixed	38	34
Private	36	32

The year of graduation of participating dentists and distributed by practice types is shown in **TABLES 3 and 4.**

TABLE 3

Participating principal dentists by year of graduation

Year of graduation	Practice type			
	NHS	MIXED	PRIVATE	Total
Before 1960	1		2	3
1960-1964	4		7	11
1965-1969	3		8	11
1970-1974	4	8	6	18
1975-1979	6	12	8	26
1980-1984	13	17	4	34
1985-1989	4	1	1	6
1990-1994	3			
Total	38	38	36	112

TABLE 4

Average year of graduation of participating principal dentists

Whole sample	NHS	Mixed	Private
1975	1977	1978	1970

4. 2. Assessment scores

Analysis of results

Each sub element of the assessment was scored and the scores totalled under each heading to provide an overall score for each element and subsequently an overall score for the practice. In areas where the the sub element requires a "yes" or "no" assessment a "yes" will score 1 and a "no" zero. Other areas were scored between 0 to 3 according to the most appropriate category for the particular practice being assessed.

Total and mean scores for each practice were analysed and compared against the whole sample of practices for each sub-element, element, dimension and total overall score for the assessment, and also against the total and mean scores for each practice type for the same. A comparative indication of standards and quality of care was thus obtained against a broad based but relatively simple numerical scoring system.

1. STRUCTURE.

The scores for the dimension of structure are derived from four elements and a number of sub -elements (See also APPENDIX 4)

TABLE 5 shows mean scores by practice type for these elements.

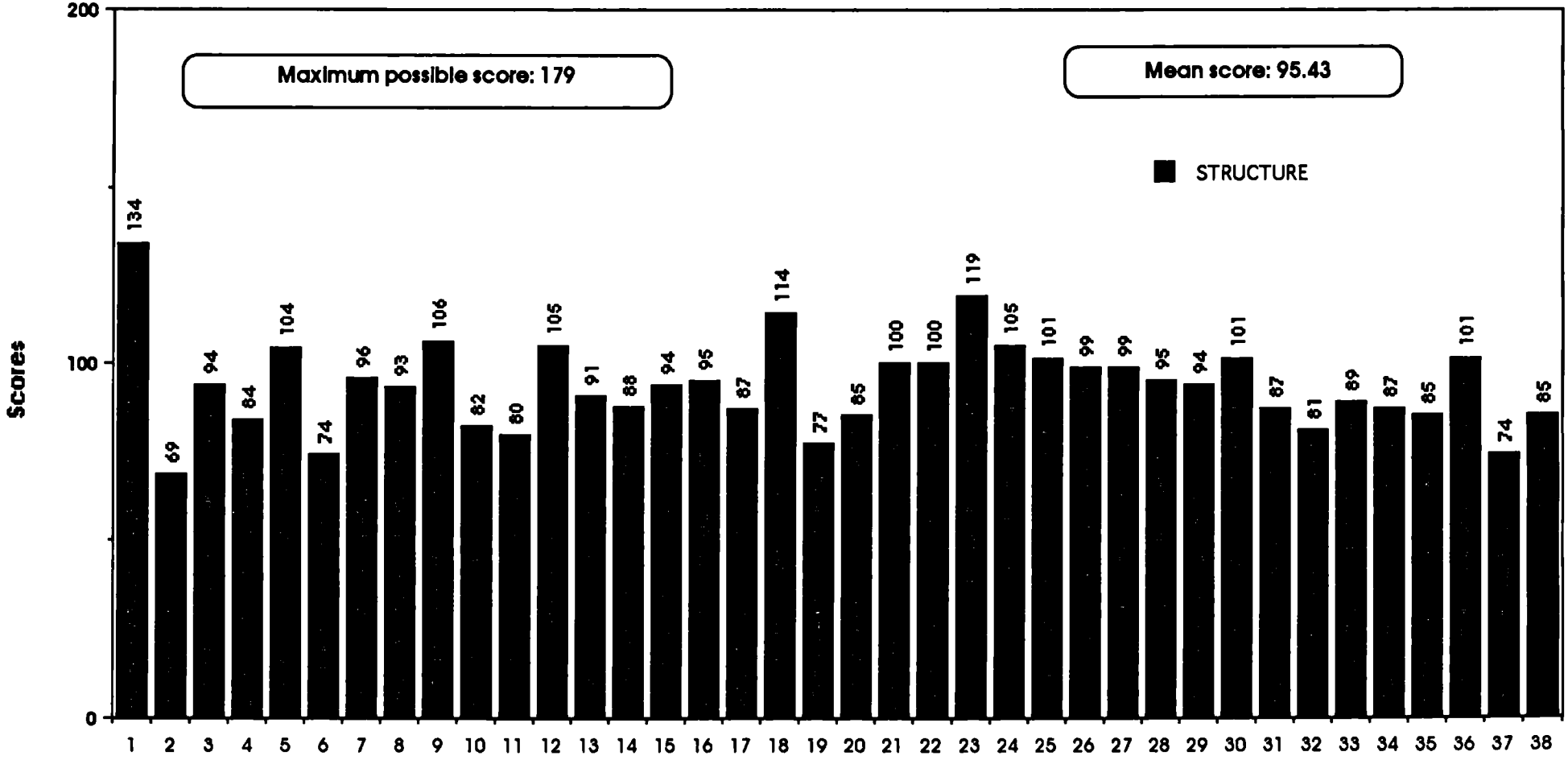
Table 5

Structure, - mean scores by practice type (nearest 0.5)

Practice type Totals	Facilities	Equipment	Personnel	Administration
Possible 179	66	51	30	32
NHS 95	34	36	16	9
Mixed 107	32	42	19	14
Private 134	46	49	21	18

The mean individual practice total score for the whole sample of practice types for Structure was 111.86 which represents 65% of the possible total score (179) for this dimension.

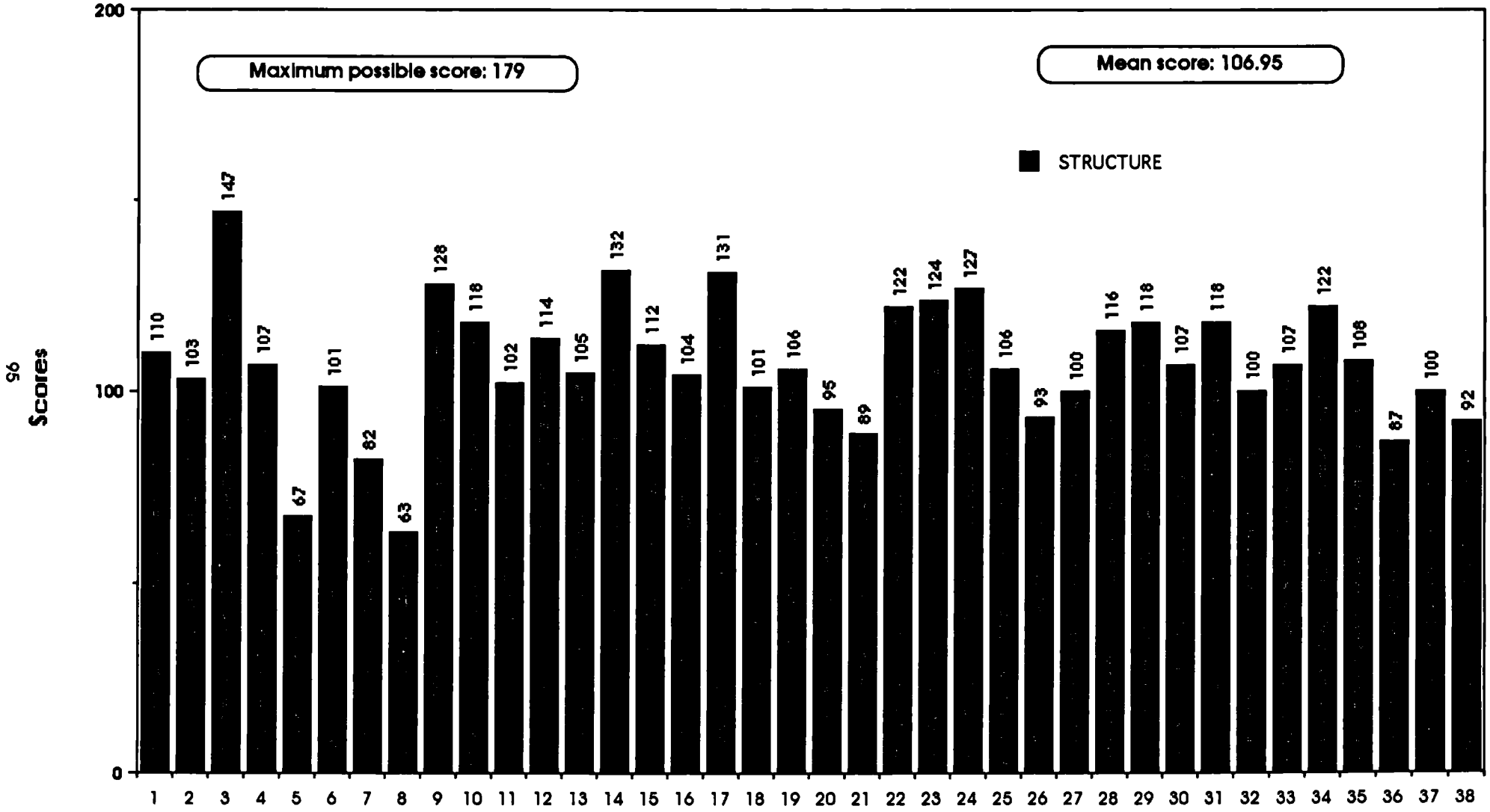
FIG. 2 shows individual practice total scores for the sub sample of NHS practices .for all the elements and sub-elements of Structure. The mean score was 95.53 which represents 53% of the total possible score.



STRUCTURE- Individual total scores, NHS practices

FIG 2

FIG 3 shows individual practice total scores for the sub-sample of MIXED practices for all the elements and sub-elements of structure. The mean for the sub-sample of MIXED practice types is 106.95 which represents 59.7% of the possible total score (179) for this dimension.



STRUCTURE - Individual total scores, Mixed practice

FIG 3

FIG 4 shows individual practice total scores for the sub-sample of PRIVATE practices for all the elements and sub-elements of structure. The mean for the sub-sample of PRIVATE practice types is 133.92 which represents 74.8% of the possible total score (179) for this dimension.

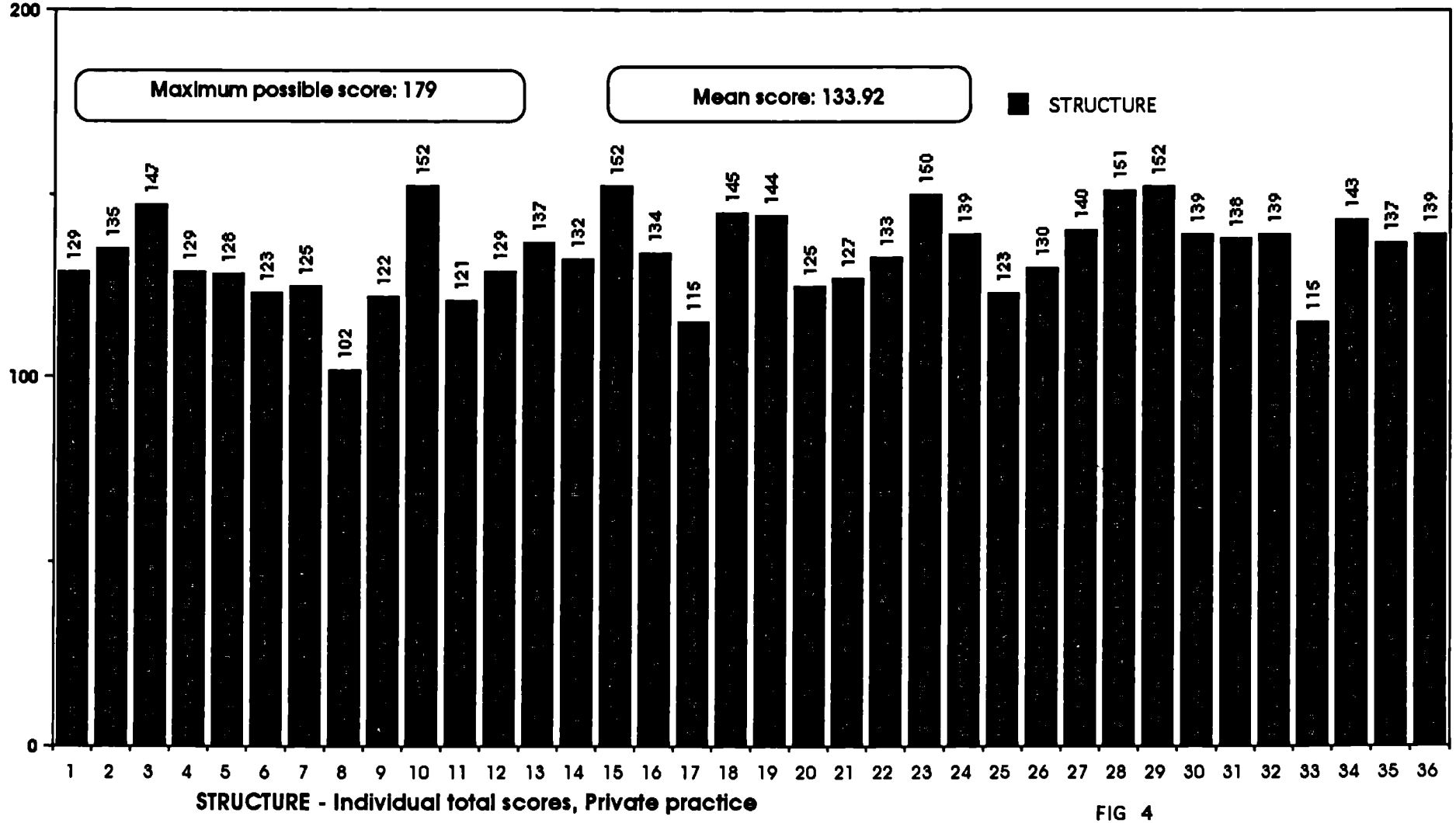
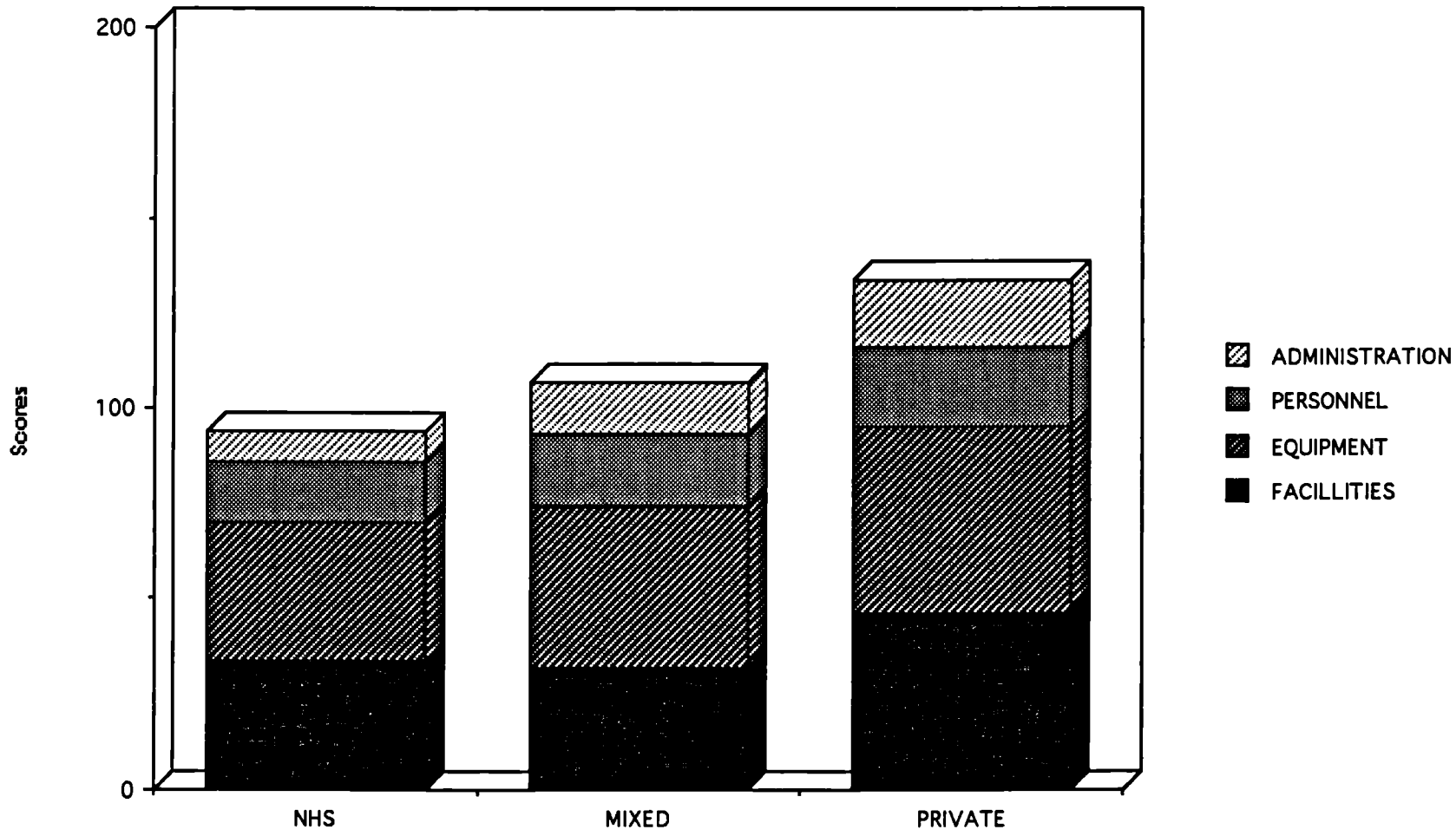

Maximum possible score: 179
Mean score: 133.92
STRUCTURE
Scores
200
100
0
129 135 147 129 128 123 125 102 122 152 121 129 137 132 152 134 115 145 144 125 127 133 150 139 123 130 140 151 152 139 138 139 115 143 137 139
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
STRUCTURE - Individual total scores, Private practice

FIG 4

FIG 5 shows mean scores by practice types for Facilities, Equipment, Personnel, and Administration, the elements of Structure.



STRUCTURE- elements by practice type
MEAN SCORES

FIG 5

2. PROCESS

The scores for the dimension of Process are derived from eight elements and a number of sub-elements (See APPENDIX 4). Almost 55% of the assessment scores relate to this dimension. TABLE 6 shows mean scores by practice type for the elements of Process.

TABLE 6

PROCESS , Mean scores by practice type. (nearest 0.5)

Practice type	Practice management	Sterilisation & inf Control	Radiography	Data collection	Diagnosis	Treatment planning	Treatment	Patient management	Total
Maximum Possible:	25	29	7	17	9	100	85	158	430
NHS	14	16	2	4	2	22	15	117	192
Mixed	14	18	4	8	8	48	41	121	258
Private	18	22	6	11	6	71	58	123	314

The mean individual practice total score for the whole sample of practice types for PROCESS was 253.54, which represents 58.9% of the total possible score (430) for this dimension.

FIG 6 shows individual practice total scores for the sub sample of NHS practices for the elements and sub-elements of PROCESS. The mean for the NHS practice types is 191.7 which represents 44.5% of the total possible score(430) for this dimension.

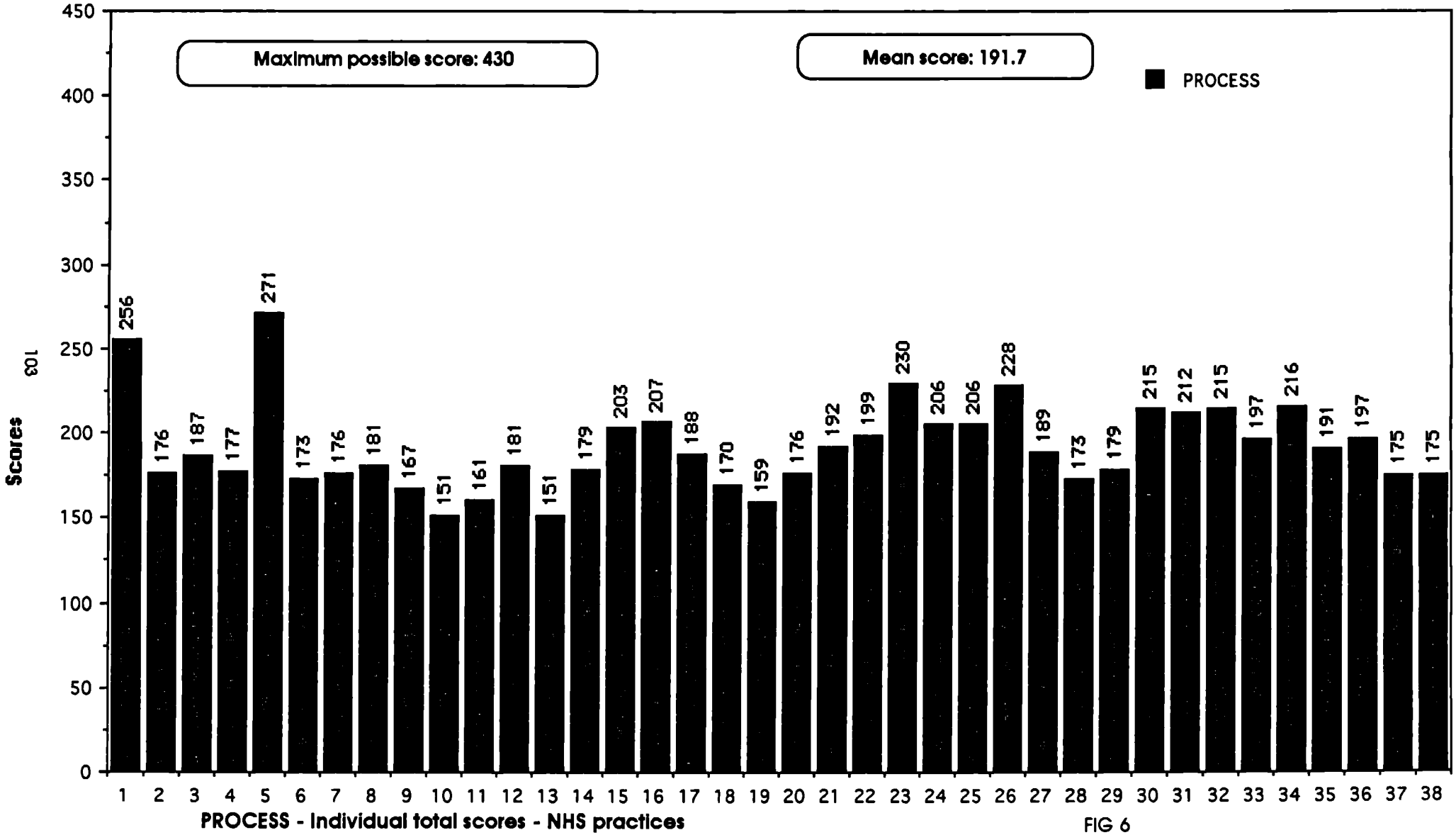
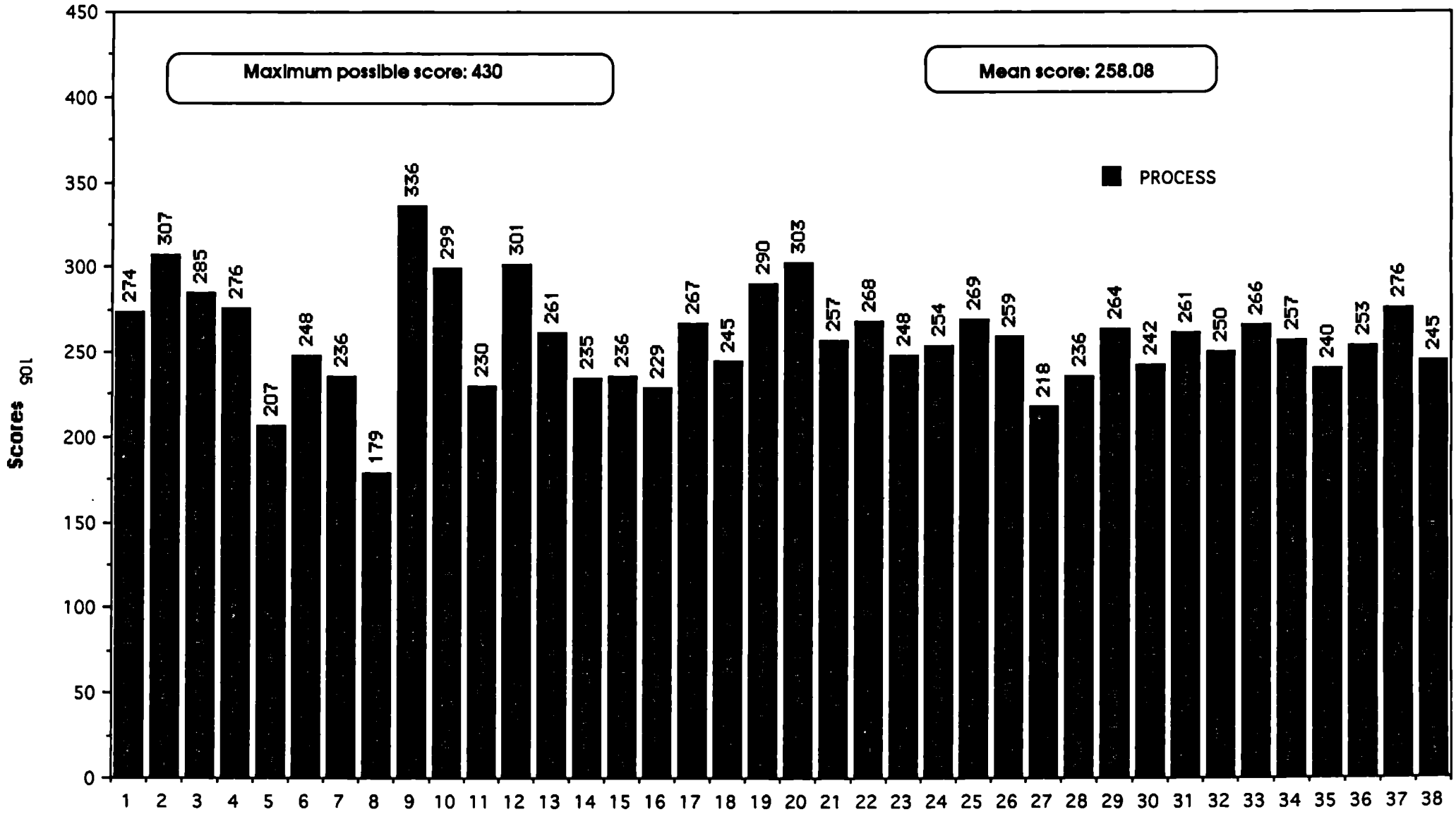

Maximum possible score: 430
Mean score: 191.7
PROCESS
Scores
450
400
350
300
250
200
150
100
50
0
256 176 187 177 271 173 176 181 167 151 161 181 151 179 203 207 188 170 159 176 192 199 230 206 206 228 189 173 179 215 212 215 197 216 191 197 175 175
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38
PROCESS - Individual total scores - NHS practices

FIG 6

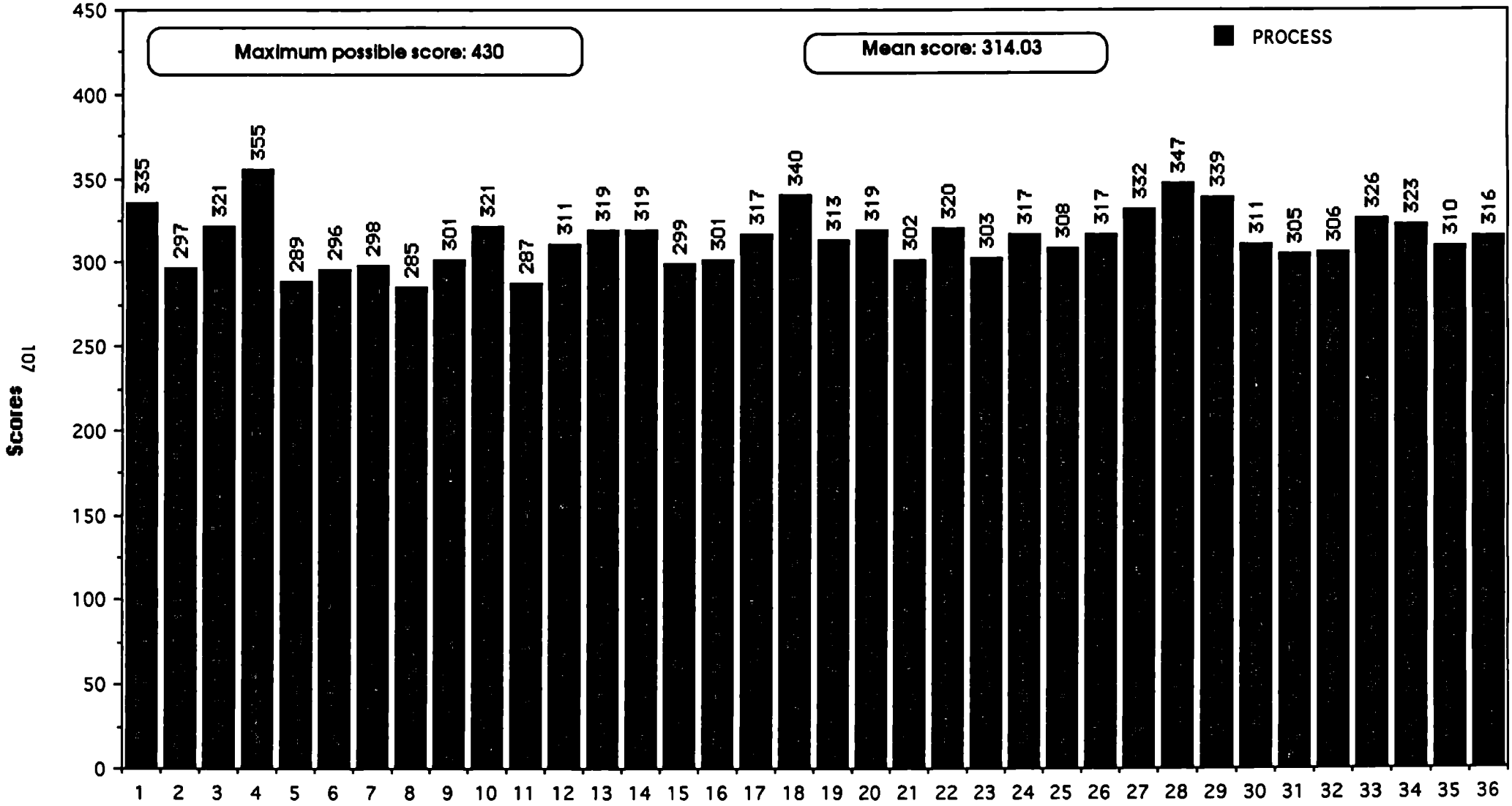
FIG 7 shows total individual practice scores for the sub-sample of MIXED practices for the elements and sub-elements of PROCESS. The mean for the MIXED practice types is 258.08 which represents 60% of the total possible score(430) for this dimension.



PROCESS - individual total scores, MIXED PRACTICES

FIG 7

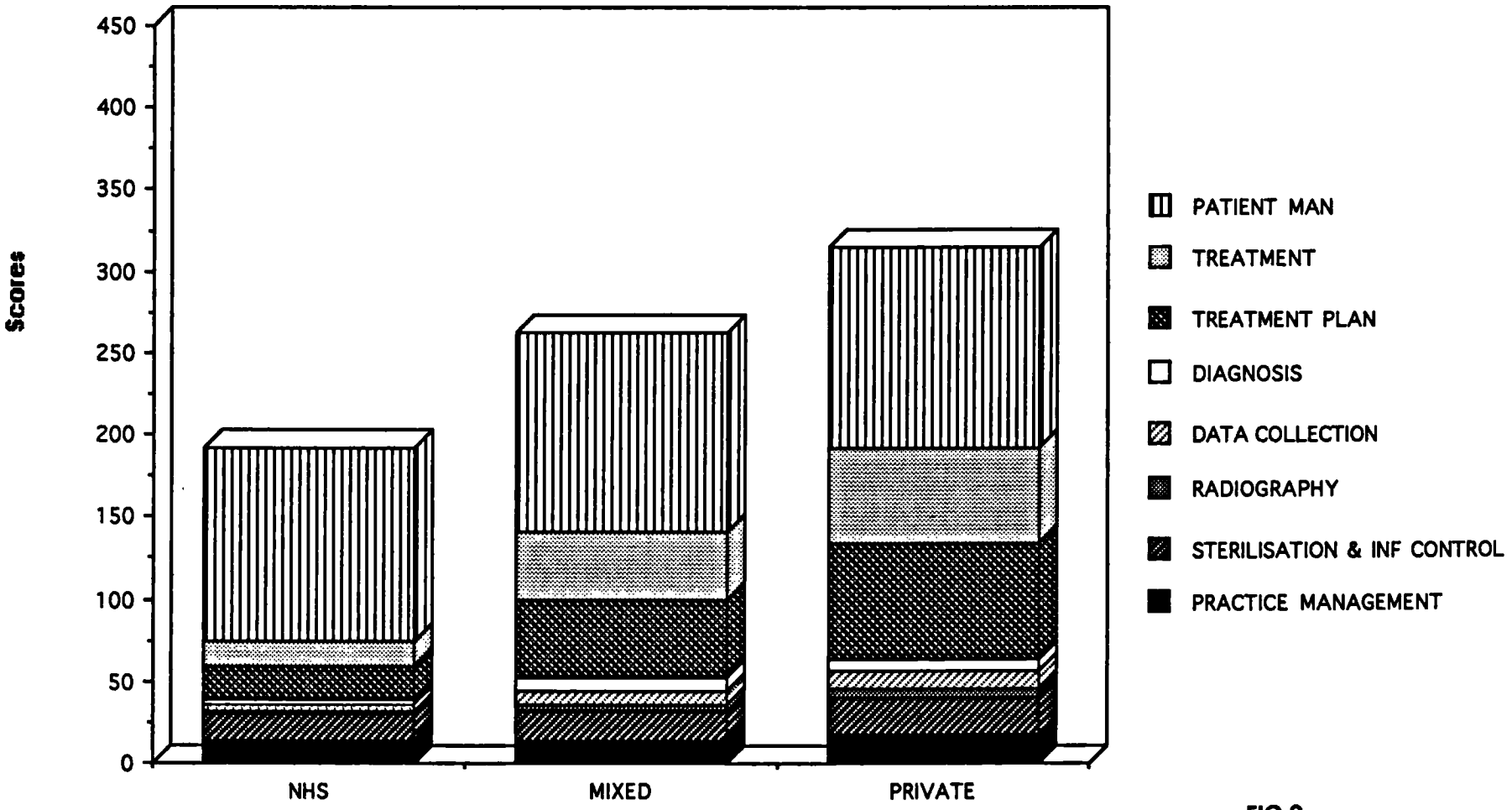
FIG 8 shows individual practice total scores for the sub-sample of PRIVATE practices for the elements and sub-elements of PROCESS. The mean for the PRIVATE practice types is 314.03 which represents 73% of the total possible score(430) for this dimension.



PROCESS - Individual total scores, PRIVATE practices

FIG 8

FIG 9 shows mean scores by practice types for Patient Management, Treatment,Treatment planning, Diagnosis, Data Collection, Radiography, Sterilisation/Cross infection Control and Practice Management, the elements of PROCESS.



PROCESS- elements by practice type
MEAN SCORES

FIG 9

3. OUTCOME

The scores for the dimension of OUTCOME are derived from four elements and a number of sub-elements. Information for three of these elements is derived from answers to the questions raised by personal interview with patients and/or completion of the Patient Questionairre (APPENDIX 5).

TABLE 7 shows mean scores by practice type for the elements of OUTCOME

TABLE 7

OUTCOME, Mean scores by practice type (nearest 0.5)

Practice type	Satisfaction	Oral Hygiene	Disability	Recall	Total
Maximum possible:	112	48	16	9	185
NHS	99	26	13	7	145
MIXED	107	27	12	7	153
PRIVATE	105	24	13	8	150

The mean individual practice total score for the whole sample of practice types for OUTCOME was 149.44, which represents 80.8% of the total possible score for this dimension.

FIG 10 shows total scores for the sub-sample of NHS practices for the elements and sub elements of OUTCOME. The mean for the whole sample of NHS practice types is 145.42 which represents 78.6% of the total possible score (185) for this dimension.

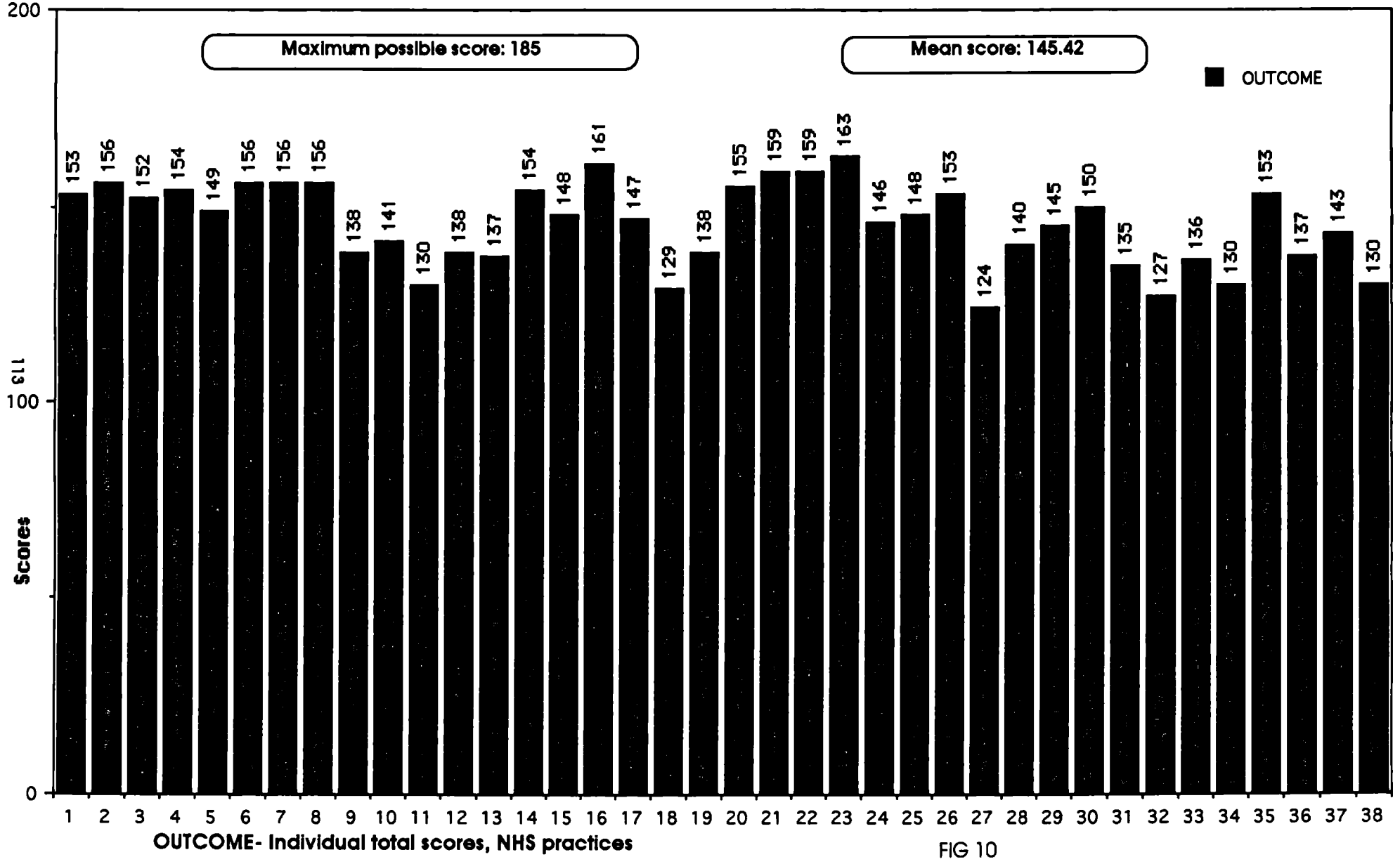
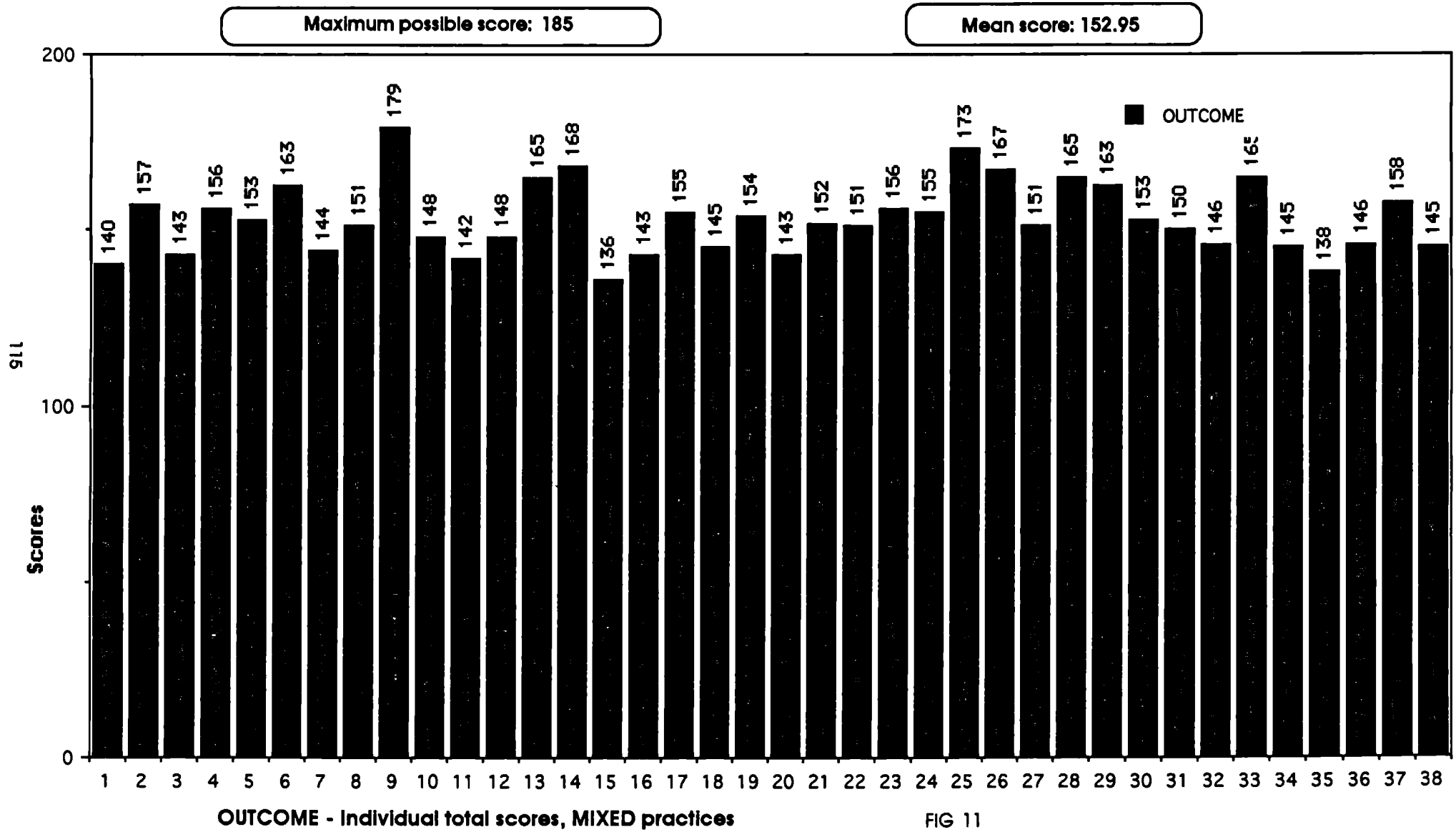

Maximum possible score: 185
Mean score: 145.42
OUTCOME
Scores
200
100
0
153 156 152 154 149 156 156 156 138 141 130 138 137 154 148 161 147 129 138 155 159 159 163 146 148 153 124 140 145 150 135 127 136 130 153 137 143 130
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38
OUTCOME- Individual total scores, NHS practices

FIG 10

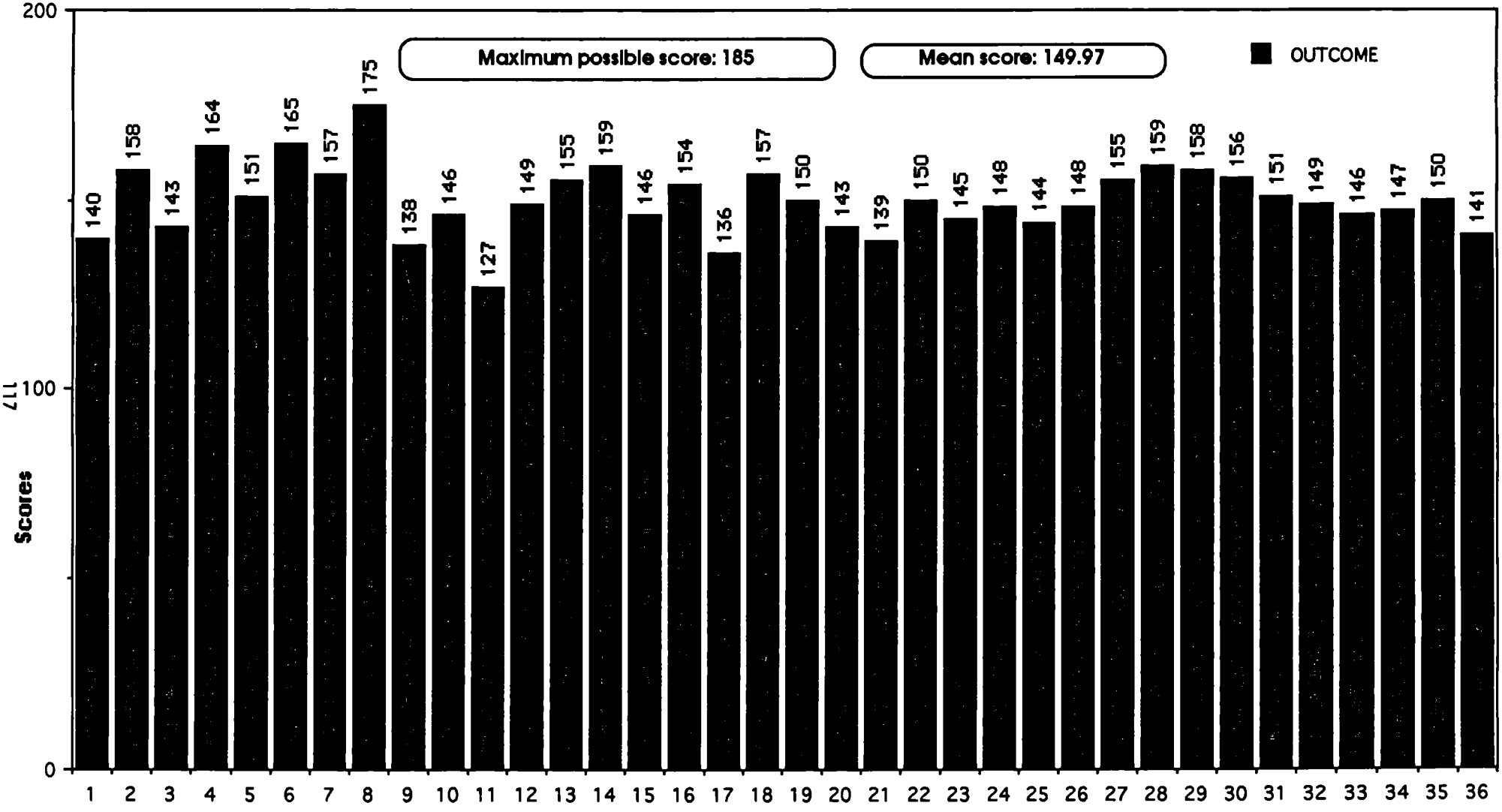
FIG 11 shows total individual practice scores for the sub-sample of MIXED practices for the elements and sub elements of OUTCOME. The mean for the whole sample of MIXED practice types is 152.95 which represents 82.6% of the total possible score (185) for this dimension.



OUTCOME - Individual total scores, MIXED practices

FIG 11

FIG 12 shows total individual practice scores for the sub-sample of PRIVATE practices for the elements and sub elements of OUTCOME. The mean for the whole sample of PRIVATE practice types is 149.97 which represents 81% of the total possible score (185) for this dimension.



OUTCOME - Individual total scores, PRIVATE practices

FIG 12

FIG 13 shows mean scores by practice types for Patient Satisfaction, Patient Oral Hygiene, Patient Disability, and Patient Recall, the elements of OUTCOME.

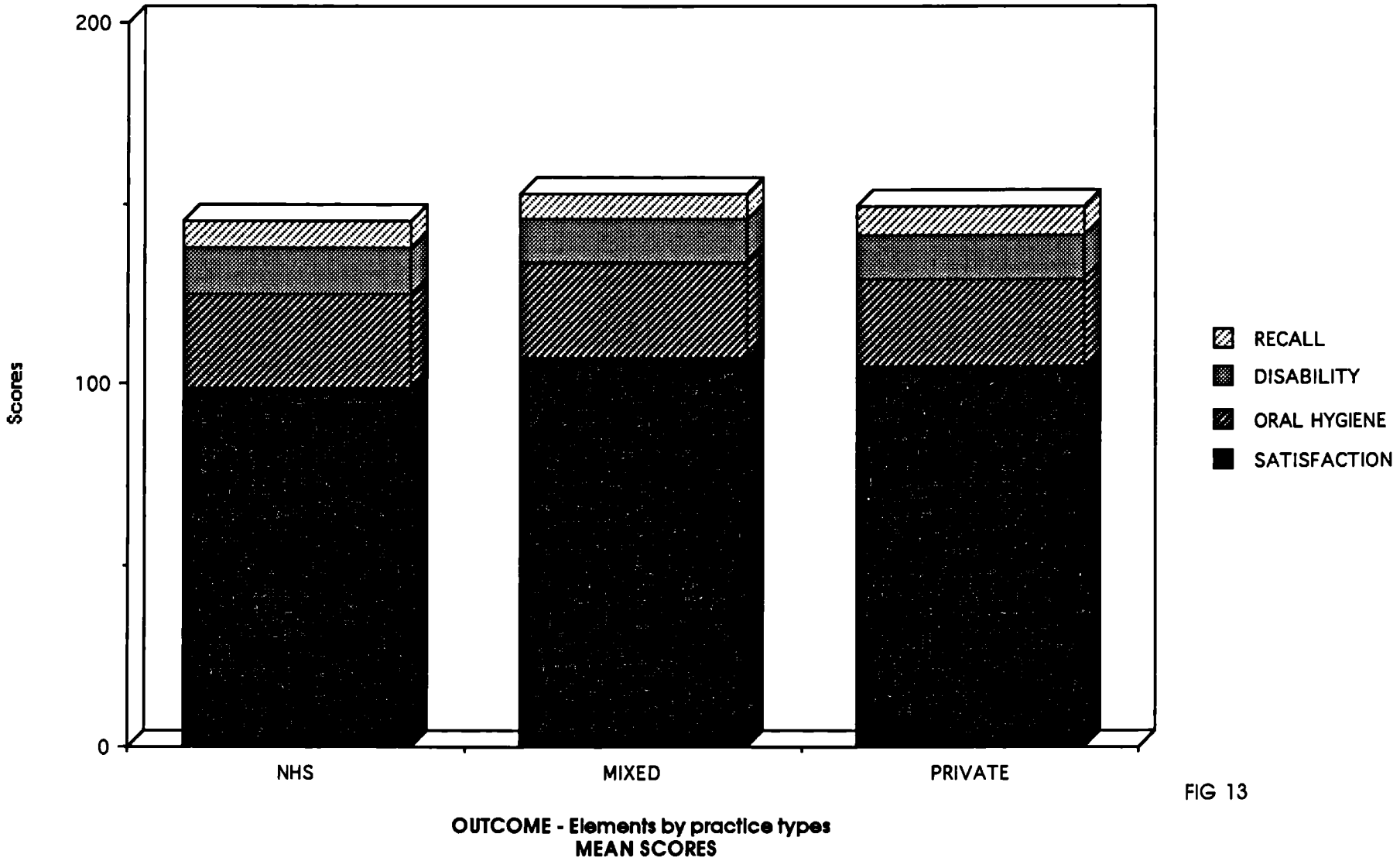

200
100
0
Scores
NHS
MIXED
PRIVATE
RECALL
DISABILITY
ORAL HYGIENE
SATISFACTION
OUTCOME - Elements by practice types
MEAN SCORES

FIG 13

TABLE 8 shows mean scores for the whole assessment by practice types

TABLE 8

Mean scores all practice types for whole assessment

Practice type	STRUCTURE	PROCESS	OUTCOME	TOTAL	% of poss max score
MAXIMUM SCORE	179	430	185	794	100
NHS	94	192	145	425	53.5
MIXED	107	258	153	514	64.7
PRIVATE	134	314	150	598	75.3

Chapter 5

DISCUSSION

Chapter 5

DISCUSSION

It was a considerable challenge to plan and instigate a quality assessment programme that would fulfil the requirement of monitoring the quality of care provided by dentists in general dental practice. To date such a protocol is not being provided on a pan-professional basis by any of the professional organisations that exist or by any system that is already in place.

A function of quality assurance (QA) is often seen as the identification of dentists who are delivering poor quality. Jerge and Orlowski (1989) have stated that QA does not end at the assessment level but rather should be the stimulus and beginning of corrective action. Whilst this study comprised rather more of a fact finding role than being part of a audit cycle nevertheless many of the practitioners who took part welcomed feedback of the findings in order to rectify deficiencies.

The paramount concern in setting up the assessment instrument and protocol was that it should not comprise a long list of dogma passed on from generations of professional forefathers but rather reflect what a consensus panel of reasonable and able dental practitioners would see as being part and parcel of good quality general dental practice. Hence the method for the study and the template for the assessment instrument were strongly based on the work of previous consensus committees of practising dentists, a literature survey, systems developed by others, and open input opinion from both a small panel of colleagues, and others on an ad hoc basis. These sources have all been defined earlier. The most useful precedents were the studies carried out by Schoen (1989) and Morris et al (1989) for the Kellogg Foundation in the USA.

Modifications and changes were implemented in almost every area to make assessment appropriate to the UK situation and the legislation pertaining to general dental practice . There was clear agreement amongst previous studies that assessment of some items and elements would be better served by a graded mark that would fine tune the score given in that particular area. No overall individual itemised weighting was used to try and define the significance and importance of each area as already the assessment instrument was structured to produce over 55% of the rating from the Process elements of the delivery of care. An absolute and definitive weighting system would be almost impossible to derive.

One of the perceived weaknessess in the project was that as is so often the case in field studies it was not possible to select a sample that represented the standards that existed in each of the categories of practice nationwide. This was because the study was based on voluntary participation and the sample cannot be considered as representative of the national standards that exist throught the country amongst larger numbers of the dental profession. The scores represent only the standards found in the practices that formed part of the study. They were a self-selected sample of dental practitioners delivering dental care in their practices under NHS, MIXED, and PRIVATE modalities of practice. Individual practices were compared to a benchmarked standard.

Despite much rhetoric about the relative merits of different systems of dental practice available in the UK (- NHS, Private, Mixed, Independent etc.) very few, if any, studies have been carried out to survey these services and assess the standards of dental care provided to patients by differing methodology and philosophy.

The sources utilised to derive the sample practices for the study did not always have clearly defined information on the practice profiles of the practices on their lists. For instance the British Dental Association (BDA), the major professional body, had virtually no data about practitioners who practised totally outside the NHS both in the London area and nationwide.

At the outset it was not expected that it would be easy to obtain permission from dental practitioners, already sensitive in this area, not only to make practice visits but to actually watch them at work treating their patients and ultimately to obtain the access to score their delivery of care. Indeed previous workers have discarded such action on the grounds that it was "...too expensive, and unacceptable to most practitioners" (Bailit,et al 1974) This author nevertheless considered observation visits an essential part of any credible baseline assessment of quality in the current delivery of dental care, and to be achieved for these purposes if at all practical. For some practitioners the perceived invasion of professional autonomy that this study represented was a situation that was insurmountable. The variable attitudes to such perceived "invasion" appeared in many cases to be transparent and the associated reasons given for refusing an assessment visit were tenuous to say the least in some instances.

The response from NHS practitioners was particularly poor at the first mailing and many were lost from the study in a greater proportion than other groups. An unknown factor here however was the contemporary nature or otherwise of the databases used for mailing information. It could well have been that there were fewer entirely NHS practices in the mailing of 513 than was appreciated . Many may have already begun a move towards independent practice. Some of these practices would then have been categorised as MIXED on receipt of the practice questionnaire. Further loss of participants in the study resulted when those practitioners who had expressed willingness to take part and returned the questionnaire were approached by telephone. The reasons at this stage for refusing to participate are previously analysed under their various categories in TABLE 1.

The American Dental Association (1978) defined quality assurance as "the assessment or measurement of, or judgment about, the quality of care and the implementation of any neccessary changes to either maintain or improve the quality of care rendered." Quality assessment does not include efforts to change or improve the level of care provided.

This study was concerned with quality assessment and not quality assurance. In line with the definitions already presented the study concentrated on the way dental care was delivered rather than the way dental care *should be* delivered. An empirical rather than a normative emphasis but an essential pre- requisite for the establishment of effective quality assurance parameters. Nevertheless it cannot be denied that this form of evaluation sends an implicit message regarding many things that should happen in a practice. For example on assessment if the evaluator asks dentists whether they have rubber dam in the practice, there is a clear implication that they *should* have rubber dam in the practice. Thus though not intended the process of assessment tends to become a template for setting standards in practice.

The standard setting exercise was intended to be the product of addressing the question " what is there about dental practice and the delivery of care that any conscientious and reasonable group of good dentists would agree has something to do with the quality of a dental practice?"

It is well known that problems arise when we wish to learn how people - especially a

specific professional group- behave. Two methods are available. We can ask, or we can observe. Neither approach is perfect, particularly in relation to a personal practice and to professional attitudes. If we ask - people are less than truthful. If we observe - people alter their behaviour.

It could be argued that an available resource such as that of private practice systems that allow appropriate time for problem solving and correctly derived treatment strategies would result in better levels of care. The project went some way towards addressing this question.

Practitioners working wholly within the NHS have clear parameters and item of service fee scales that are finite and nationally defined. Since October 1990, when a newly revised contract for the terms of service within the General Dental Services of the NHS was introduced, capitation and continuing care payments are also laid down and determined nationally by the the Department of Health.

Other systems of practice have differing protocols. In 'mixed' practice the practitioner delivers patient services for a fee conglomerate consisting of income from the NHS system for some patients and either a private capitation scheme (e.g. Denplan, BUPA, MIDA etc.) or item of service private scale of fees for others. In some cases two methods of payment are mixed in individual patients. In an 'independent' practice - which presumably is meant to signify independence from the NHS - this usually denotes in most cases , despite the title, still some considerable dependence on the NHS system. Usually children and possibly young adults are seen under NHS capitation, with sometimes also lower income groups and other priority classes of patients exempt from NHS charges being seen on an item of service basis. For the purpose of this study the above categories of practice are considered as "mixed".

In true "private" practice dental care is delivered either by a fee for service calculated maybe from a set hourly rate plus any accrued disbursements or from a "menu" of item of service charges. A capitation scheme such as Denplan in some cases provides total income and arguably provides a resource more appropriate to needs as fee setting is practitioner determined.

Contemporary reports show large amounts of treatment in the form of interventionist and reparatively based procedures being carried out by all age groups of

practitioner in the NHS (The Dental Practice Board Annual Reports 1989-90,199-92). It is evident from these figures that prescribing patterns can be predicted fairly accurately in the General Dental Services of the NHS (GDS) on the basis of dentists age, sex, and geographical location. The still mainly item of service fee structure of the GDS and the levels of funding available, from current practitioner opinion in the journals are considered to limit quality. (Carlin, P 1991; Sanford S R 1991; Lewis, K 1991).

In theory, the GDS has operated an inbuilt quality assessment and assurance method through the Dental Reference Officer (DRO) infrastructure, but in reality this has been extremely limited both in terms of resources and funding and is effective only over a very small area of GDS practice. In reality as far as the general dental services of the NHS are concerned formalised quality assurance is at a very early stage.

In private practice, either direct fee paying where the patient and the dentist are the only parties to the treatment decision, or in other independent systems such as Denplan, the level of payment should in theory accurately reflect the relevance and quality of the service. There will be none of the above restrictions if the patient is informed with regard to fee levels and has the ability to pay. The overall standards of care could therefore reasonably be expected to be higher. No system of profession-agreed quality assessment or assurance operates however in traditional private practice areas, but continuous practitioner assessment is intended to operate in private capitation schemes.

This is especially true of the new capitation-based plan introduced by British United Provident Association, (BUPA) as BUPA DentalCover™ which firmly addresses the quality issue in the private sector. There are firstly registration criteria for quality practice based on consensus standards from the profession. These are largely based on elements of structure, legislation requirements to operate a contemporary dental practice, health and safety protocols and baseline programmes for team training. This is followed by full accreditation based on practice inspection one year later and annually thereafter. . This comprises a more process orientated review of actual delivery of care. Dentists who intend to be part of the scheme are only then promoted to the corporate sector of this organisation.

Such schemes are most certainly the first attempt in this country to achieve consensus

standards for capitation system funded private practice - or for *any* method of private practice for that matter. Previous capitation payment funded systems - whether controlled by the state or private enterprise- have been open to accusations of being a charter for "supervised neglect"

Given the many parties involved in paying for, providing and receiving the various types of dental care difficulties arise when attempting to determine who should set standards. There will be obvious conflicts of interest. Can funders achieve this fairly when their major concern will be cost containment? Can users (patients) do it when they are not really able or equipped to properly evaluate the various aspects - particularly technical- of treatment options? Can providers (dentists) do it when models of professional expertise lead in many cases to the "doctor knows best" attitude. (Plamping & Freed 1991).

In the study mean scores for each practice were analysed against the whole sample of practices for each sub-element, element, dimension and total overall score for the assessment, and against the mean scores for each practice type for the same. A comparative indication of standards and quality of care was thus obtained.

The question of standards nevertheless presented some difficulty. What levels of non-compliance with a criterion should result in an unacceptable rating for that criteria? How valid is a specific percent and how can severity be considered without using a complex weighting system? When criteria are grouped into elements and these further into an overall rating then the problem is compounded.

A degree of subjectivity is involved. Despite this when direct comparison was possible between practices the results obtained with the assessment instrument seemed to reflect the overall feel for the practices concerned. Other questions and concerns of validity relate to the elements relating to diagnostics. If radiographs are poor either in quality or quantity, how may the remainder of the process be evaluated? Should not unacceptable radiographs render the rest of the diagnostic and treatment strategy process unacceptable?

Throughout the study the schedule of procedures in the assessment visit followed the format of the assessment instrument, but patient treatment , convenience, and practice goodwill were always allowed precedence. Clinical records review was

usually undertaken after all other visit requirements had been achieved. At the conclusion of the visit discussion of all aspects of the visit was carried out with the host dentist/s. Some dentists were extremely interested in the format and objectives of the study and requested some form of feedback in due course with regard to the "position" of their practice in relation to others in the study.

In the element of STRUCTURE both the mean and total scores for NHS practice and MIXED practice were significantly lower than those of PRIVATE practice. The mean score for the whole sample was also not achieved by the mean scores for the sub-samples of NHS and MIXED practice. This bears out the overall subjective impression of the evaluators following completion of the study that the dentists practising in PRIVATE practice had better equipped and staffed practices.

The mean score for the whole sample represented 65% of the possible total score whilst of the sub samples of NHS, MIXED and PRIVATE practice only those dentists in private practice achieved a mean score in excess of the mean for the whole sample. The data analysed by practice type (FIGS 5 & 6) for each of the sub-elements of STRUCTURE in relation to both total and mean scores also shows higher scores for each of the sub-elements by the dentists in PRIVATE practice.

In the element of PROCESS the data demonstrates that total and mean scores for NHS and MIXED practice were lower than those for private practice. The mean total score for NHS practices was again less than the mean score for the whole sample. The data analysed by practice type for each of the sub-elements of PROCESS in relation to both total and mean scores shows higher scores for each of the sub-elements by dentists in PRIVATE practice.

The scores for the dimension of OUTCOME are derived from four elements and a number of sub-elements. Information for three of these elements is derived from answers to the questions raised by personal interview with patients and/or completion of the Patient Questionnaire (APPENDIX 5). The results with regard to OUTCOME were very similar from each of the three practice modalities.. Tables 9 & 10 and FIGS 12, 13, & 14 demonstrate that total and mean scores for NHS and PRIVATE practice were lower than those for MIXED practice but not by such large differentials as seen in the other two elements. The mean total score for NHS practices was again less than the mean score for the whole sample.

The data analysed by practice type for each of the sub-elements of OUTCOME in relation to both total and mean scores also show slightly higher scores for each of the sub- elements by the dentists in MIXED practice. The impression gained at practice assessment visits was that practitioners in MIXED practice were on a gradient of betterment and a structured move towards private practice with consequently clearly observable and excellent "customer service" in place and in some cases a recent refurbishment of treatment areas. This was possibly reflected in good responses to the patient questionnaire. In addition, the evaluators postulated that there was a negative influence in this area from patients in the private sector who had experienced many more annual hygiene visits in certain private practices. As a result they were not only more aware of the parameters of gingival pathology and hence slightly over critical of their personal status as well as being in addition more analytical of 'customer service" in the practice.

Patient satisfaction has been generally accepted as an important element of quality of care. This involves far more than a demonstrably high level of technical and clinical competence on behalf of the dentist(McDougal 1984). Dental care 'consumers' nevertheless are hard put to evaluate the technical and clinical ability of the dentist and the appropriate nature or otherwise of the professional procedures rendered (Kress & Silversin 1985).

The use of this assessment instrument in this format has provided opportunity to recognise areas of this instrument that could be strengthened. The contents and protocol for accurate assessment of the element of OUTCOME is particularly appropriate, It would not be disputed by dental professionals that an important and significant reflection of the outcome of a high quality dental practice delivering above average levels of care throughout the spectrum from preventive advice and treatment to complex invasive procedures would be the improved oral health status of its patients. In the instrument used in this study OUTCOME was largely dependent on subjective opinion for measure and did not really reflect the reality of the larger differences in quality in the delivery of care shown by the data for STRUCTURE and PROCESS in the practices concerned. Possibly it could be desirable to introduce a clinical examination of patient samples to clearly establish reliable indices in this area. This may well be unacceptable to many practitioners especially on a voluntary basis. The transfer of desirable outcome goals and their measurement to practical programmes of evaluation has already proved difficult in other studies. (Morris, et al 1988).

Similar difficulties and non- enthusiasm for managing these difficulties have been described by Doll (1975) in medical practice "...formal reviews of the outcomes of practice can create seriously wrong impressions unless they are conducted with statistical wisdom, and they can hardly be expected to encourage the development of mutual trust and confidence" Nevertheless the use of an Oral Health Index(OHX) a multifaceted instrument , to establish the baseline status of oral health and to review and follow a patient through various treatment procedures can have some value. To establish any health gain it will be necessary to have some consistent measure of the criteria used to assess oral health. Patients who move from dentist to dentist either electively or because of relocation could still be subjected to the survey facilitated by such an index. This process would have the potential to map long term health gain or otherwise. The relationship of process to outcome in the long term has been difficult to establish, and the effects of different treatment choices may not clearly be seen.

The use of an effective assessment instrument based on the parameters tested in this study could well become a means of professional self-regulation for dentists. If we are however to follow the pathways taken by the medical profession in these areas professional self-regulation has proved largely ineffective as a tool for removing incompetents from the practice of medicine, unless this incompetence was in a form that publicly embarrassed the professions (Jost 1990)

If a system of quality assurance is to be the basis of external accountability for differing levels in the delivery of dental care there needs to be some considerable thought given to the refinement of a universally acceptable format. Early initiatives now taking place and led by the Faculty of General Dental Practitioners and paralleled in the private sector are an interesting development. There is no doubt that it is reasonable to expect that the providers in all philosophies of dental services within and without the NHS, ie dentists and their teams, should be involved in a measure of quality assurance or peer review. That quality assessment procedures should be strictly applied in general dental practice more than in any other discipline would nevertheless be unfair. The whole spectrum of responsibility for quality of care should be assessed and be answerable, viz. - the schools, their teachers and methods, the licensing bodies and all associated with the professional development of the dentist.

This project has looked at the above considerations in general dental practice and related them to the development of a suitable evaluation instrument. The routine use of quality assurance systems acceptable to the profession as a whole , as an essential aspect of professional growth and as part of assured standards for our patients would be a laudable goal. This study has been a first step in understanding the need for wider acceptance of team based quality assessment and assurance in general dental practice.

Chapter 6

CONCLUSIONS AND RECOMMENDATIONS

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6.1. Conclusions

It proved possible to derive a suitable assessment instrument to assess quality and measure standards in general dental practice (NHS, MIXED, PRIVATE) in the UK situation.

To utilise this type of quality assessment in every type of practice in the study practitioners concerns regarding disruption , intrusion and defensive feelings with regard to the observation of themselves and their teams by another professional were an important consideration

The instrument used as an integral part of this study was effective in assessing quality and the different standards that existed in and between the various types of practices that were assessed in the study.

Seventy nine percent (79%) of the dentists approached did not take part in the study for one reason or another. A disappointing response to a general dental practice quality assessment initiative.

6. 2. Recommendations

- This study has been carried out on a relatively small group of general dental practices in one area of the UK. There is a need for much larger studies to further assess quality standards and the delivery of care throughout a wider geographical area based on many more practices.

- In this small study differentials in the quality of care were evident. Further research is needed to determine the barriers, perceived and actual , to the delivery by general dental practitioners of consistent levels of dental care that can be the subject of continuing quality assurance.

- The methods of most appropriately assuring quality against benchmarked standards in general dental practice should be further studied. There should be a requirement that such projects are objective as far as is possible and not too disruptive of clinical care, a concern of practitioners in this study.

- Further research into the effective use of records and radiographs as a tool for both quality assurance and "off site" assessments is required. This study was lengthy and possibly would not be cost effective over a much larger similar format. Any attempts based on such further studies to mitigate such cost implications would be valuable.

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HMSOLondon

APPENDIX 1

Preliminary letter to practitioners

KEITH MARSHALL

Southview Edenbridge
Kent TN8 5NB
Tel: (0732) 865021/862174
Hope Cottage Hever Edenbridge
Kent TN8 7LQ Tel: (0732) 863228

Consultations by appointment

Maurice Wohl Centre
King's College School of
Medicine & Dentistry
London SE5 9RW
Tel: (071) 326 3088/9

Date as postmark

DEAR COLLEAGUE

I am carrying out a research project into the process and structure of services offered by practices of various types, e.g. Single handed or Group practice, NHS/Independent/Private etc.

I would appreciate your help by allowing me to include your practice in one of these categories for this study. If you would be happy to do this, so as to give me some preliminary information would you please complete the few questions on the attached sheet? I will then know within which group your practice belongs, and will contact you again in due course.

I enclose a stamped envelope for your convenience.

I appreciate your help.

With best regards

Yours sincerely

K F MARSHALL

APPENDIX 2

Practice profile questionnaire

PRELIMINARY PRACTICE PROFILE

THE PRACTICE

[Please tick, you may check more than one section if necessary to provide an accurate overall picture]

NHS (over 90%) .....

NHS (under 90%) .....

Independent .....

Denplan .....

Private, fee for service(Over 90%) .....

Private, fee for service(Under 90%) .....

THE PERSONNEL

(Please insert a number as appropriate)

1. DENTIST/S

Full time ..... Part time.....

Hours worked.....

2. HYGIENIST/S

Full time..... Part time.....

Hours worked.....

3. DSA/s

Full time..... Part time.....

Hours worked.....

Continued.....

4. RECEPTIONIST/PRACTICE ADMINISTRATOR

Full time ..... Part time.....

Hours worked.....

PRACTICE
PRINCIPAL/S.....

PRACTICE
ADDRESS.....

.....

.....

CONTACTTELNO:.....

* Please return in the prepaid envelope. - Thanks for your time! *

APPENDIX 3

Follow up letter to practitioners

KING'S COLLEGE SCHOOL OF MEDICINE AND DENTISTRY
THE MAURICE WOHL GDP CENTRE
45-47 Caldecot Road London SE5 9RW
Telephone : (071) 326 3088/9

«FORENAME» «SURNAME»
«ADDRESS 1»
«ADDRESS 2»
«ADDRESS 3»«POSTCODE»

date»

Dear Dr «Surname»

Re: General Dental Practice Research Project

You kindly returned my preliminary questionnaire a little while ago giving details of the structure of your practice.

The objectives of this study are to look at different methods of the delivery of dental care and if possible some patient perceptions of their dental health. I would be indebted to you if you would allow myself and my assistant Kathryn Thomas to spend about two hours with your team.

1. Our first objective is to record the range and quality of procedures provided by the practice for established patients - say over a period of five years or so. To do this, one of us (KM) would like to obtain data from perusal of practice records for eight patients who had been treated for five or six years within the practice.

2. Our second objective is to record the utilisation of the practice ancillary staff, and their range of duties. (Receptionist, DSAs etc). To do this Kathryn and/or myself would like to spend some time in reception and watching your DSAs work with patients.

3. We would ask eight random patients whilst we are with you to agree to a short interview and complete a simple questionnaire. These can be distributed by your receptionist to the patients and returned to her on completion. These questionnaires would provide information on patient attitudes to their dentist and his/her staff, and also on their personal management of their dental health and maintenance.(Brushing, flossing, etc). It would probably be best if we enlarge on this a little further by speaking to you on the telephone fairly soon. Please be assured that both Kathryn and I work in General Dental Practice and are ever aware of the need to maintain patient goodwill. We would in no way disturb your working routine (or as minimally as is humanly possible !).

We would consider it a privilege and favour to be able to enlist your help in this project.

Yours sincerely

KEITH MARSHALL

Practice f/up letter

APPENDIX 4

Script for telephone call to practice

TELEPHONE FOLLOW UP SCRIPT OUTLINE

* **Use principal's name as often as possible throughout this conversation** *

Hello, Dr/Mr..... Thank you for taking my call (during practice time) (at home). I'm really following up on our letter with regard to the research project and the possible visit to your practice by Keith and myself.

Is there anything I can clarify for you at this stage?

Answer any queries fully and honestly. If all OK then:

I'd like to speak to your receptionist/practice manager/secretary **(NAME)** to arrange a date and time for a visit that would be suitable for the practice. Ask to be transferred or call back if more convenient.

Emphasise before closing that we will not need to affect the treatment of patients or the schedule for the session in any way. We are not part of any organisation such as the FHSA, the DPB , the DOH etc. but are carrying out independent research.

N.B. ANSWER ANY QUESTIONS ON THE ABOVE. THANK PRINCIPAL FOR SUPPORT AND HELP IN THIS MATTER.

FIX A <u>DEFINITE DATE</u> WITH RECEPTIONIST/MANAGER AND THANK HER AGAIN. USE HER NAME AS OFTEN AS POSSIBLE DURING THIS CONVERSATION

APPENDIX 5

Assessment and evaluation instrument for practice visit

Assessment Instrument & Manual for General Dental Practice

K F MARSHALL

Department of Dental Public Health & Community Dental Education and the Maurice Wohl General Dental Practice Centre, King's College School of Medicine and Dentistry, Denmark Hill London SE5 9RW

PART 1. STRUCTURE

A) FACILITIES

Reactions to this section and all similar ones are recorded by placing a circle around the number that precedes one of the four criteria under each sub-element. (*NB To fulfil the criteria for a "3" has to be something extra special - say the top 10 or 12%% of those seen- not just nice and perfectly OK)

1. PRACTICE SETTING

a) Parking (Remember to include hygienists when considering spaces for patients per professional)

0. No patient parking. Not easy access from public transport

1. No parking but good access from public transport

2. Limited parking for patients (1 to 3 spaces per professional)

3. Ample parking for patients (More than 3 spaces/professional)

b) The building/The grounds/The practice sign
(Record collective impression of all three. If one needs repair, all three are scored "0")

0. Unattractive, messy, repairs needed.

1. Needs attention or painting

2. Neat and clean

3. Unusually attractive and well cared for

c) Entrance door/hall (Record both collectively as above)

0. Unattractive, messy, repairs needed

1. Needs attention or painting

2. Neat and clean

3. Unusually attractive and well cared for

d) Access for handicapped

0. Impossible

1. Difficult

2. Easy

3. Special provisions
(Ramps, bar supports, lifts etc. If anything special exists score "3")

2. RECEPTION AREA/WAITING ROOM

a) Size (Consider the no. of profesionals for whom space is needed. Anticipate the likely degree of crowding. A hygienist, full or part time, is counted as one professional)

0. <2 seats per professional

1. 2 seats/professional

2. 3 seats/professional

3. >3 seats /per professional

b) Furnishings (Chairs, tables, lamps,rugs etc)

0. Replacement needed

1. Repairs or maintenance needed

2. Neat, clean, good repair

3. Attractive and stylish

c) Ambiance (Overall impression, any pictures, plants, an aquarium etc)

0. Stark & uncomfortable environment

1. Adequate, but no effort made to create a pleasant environment

2. Pleasant & comfortable

3. Very attractive & stylish

d) Dental Health Education Material

0. None available

1. Some material available - but disorganised

2. Organised in a special rack or table

3. Specific DHE area with audio-visual equpment, adjacent to or part of reception room.

3. BUSINESS AREA/OFFICE

a) Size

0. Part of reception/waiting area. Small & cramped

1. Minimal space for one person only

2. Discrete and separate business office

3. Custom designed office/business area of high standard

b) Filing & patient records

0. Spread in multiple areas

1. Poor position, inconvenient access

2. Easily and conveniently accessible

3. Separate custom designed filing area

4. RADIOGRAPHIC FACILITIES

a) Area

0. No functional X-ray area

1. Area compromisingly small

2. Adequate area

3. Large, convenient and well designed area

b) Safety

0. No shielding walls or partitions

1. Not enclosed or separate

2. Entire area shielded

3. Custom radiography area with viewpoint for radiographer

5 TREATMENT ROOMS/MODULES

In multiple practices scores should be averaged.

a) Number

0. Less than 1 per dentist (shared)

1. One per dentist

2. One or more per dentist

3. Suite of treatment rooms demonstrating an excellent facility

b) Size

0. Room for dentist only

1. Crowded if nurse at chairside, but possible

2. Room for correct dentist/DSA seated operating

3. Room for two assistants

c) Ambiance/surroundings (not equipment)

0. Stark. Basic essentials

1. Evidence of token effort to create a comfortable atmosphere

2. A pleasant atmosphere successfully created

3. Designer integrated workplace with excellent comfortable feel

d) Cleanliness

0. Messy & dirty

1. Neat but not recently cleaned

2. Clean, neat, tidy

3. New, clean & sparkling. An exceptionally hygienic looking work area

6. SUPPORT ROOMS /AREAS

Does the practice include the following rooms/areas?

Whilst it is not essential that a practice includes separate areas or rooms for all the functions listed, they nevertheless have the potential for contributing to the effectiveness of the patient care programme. Their presence or absence should be acknowledged. An "area" means designated or committed space not shared with other functions. A 'room' may have more than one committed space, however.

	NO	YES
a) Central Sterilisation		
b) Laboratory		
c) Stock/supply		
d) Patient Education		
e) Recovery		
f) Patients toilet		
g) Handicapped toilet		
h) Staff toilet		
i) Staff lounge		
j) Dark room		

6 Support rooms/ areas (Continued)

	NO	YES
k) Consultation		
l) Private office		

7. TRAFFIC FLOW

Leave recording until towards the end of the visit when an opportunity to have observed all personnel movements is more likely to have been achieved.

a) Patients

0. Congestion involving patient in treatment area
1. Congestion only in reception /office area
2. No treatment room traffic problems
3. No congestion at any time in the practice

b) Staff

0. Dentists and staff cannot easily move around the practice
Extremely poor traffic flow

1. Obvious areas of bottleneck

2. Occasional crowding in certain areas but no compromise to
efficiency

3. Unimpeded and efficient flow of all personnel

B) EQUIPMENT (All answers in this section will be a positive or negative check)

	NO	YES
1. STERILISATION		
a) Ultrasonic cleaner		
b) Cold sterilisation		
c) Autoclave/chemclave		
d) Oven/dry heat		
e) Closed storage for instruments		
2. X-RAY		
a) Central OPG		
b) Radiography unit in each treatment room		
c) High speed timers		
d) Collimated cones		
e) Lead aprons available		
f) NRPB reviews		

3. TREATMENT ROOMS

	NO	YES
a) Modern powered chair, able to easily assume supine position		
b) Two stools (Dentist/DSA)		
c) Good operating light		
d) View box at chairside		

4. INSTRUMENTS (**At this point we ascertain whether the practice HAS the instruments not whether they are used - I e is the practice equipped to render comprehensive general dentistry?)**

a) Periodontal probe		
b) Scalers/currettes		
c) Endodontic kits		
d) Aspirating syringes		
e) Comprehensive range of exodontia/surgical instruments		

5) TREATMENT SUPPORT		
a) Fibre-optics on handpieces		
b) High volume evacuation/central suction		
c) Rubber dam kits		
d) Magnification/loupes		

5. Treatment support (Contd)..

	NO	YES
e) E. P. T.		
f) Articulators & facebows		
g) Ultrasonic scalers		
h) V C L for composites		

6. PRACTICE SUPPORT

a) Auto film processing inc E O films

b) Model Trimmer

c) Polishing lathe

d) Multiple phone lines (transferable)

e) Intercom system

f) Computer

g) Telephone answering machine

7. PATIENT SUPPORT

a) B P apparatus

b) Oxygen & Emergency equipment

c) N_2O for R A

8. HAZARD CONTROL

	NO	YES
a) Eye protection (Staff)		
b) Eye protection (Patients)		
c) Radiation monitor badges		

d) Remote timers

e) Capsulated amalgam

f) Mercury spillage regime

g) Scrap amalgam storage

h) Face masks available & worn

i) Surgical gloves available to all staff & worn

j) Light shields for VLC equipment

k) Smoke alarms

l) Fire extinguishers

m) All waste bins lined

n) Heavy duty gloves available

o) Sharps disposal

p) Protective coverings for light coverings etc

q) Disinfection for impressions

r) Rubber dam used as appropriate

C. PERSONNEL This section refers mainly to aspects of support staff in its entirety apart from Section 10 which relates to the dentist/s. Personal observation will play a large part in obtaining the information for this section as well as answers to the questions listed. It may be better therefore to leave completion of this section until later in the day so that opportunities for information gathering during informal conversations are maximised. A thorough knowledge of the elements of this section will be an advantage so that conversations can then by this preparation be directed casually towards the areas you wish to explore.

1. NUMBERS - Patient care

0. No chairside assistance

1. <1 Assistant/dentist (shared)

2. 1 Assistant/dentist

3. >1 Assistant/dentist

2. NUMBERS - Administration

0. None admin only

1. One person providing admin support

2. >1 but <2 persons per dentist providing admin support

3. >2 admin /dentist

3. TRAINING OF SUPPORT PERSONNEL

0. None with a qualification or formal training
(National certificate or Hospital qualification)

1. < 50% of staff with formal training & qualification

2. >50% of staff with formal training & qualification

3. All staff formally trained and qualified,and/or some trainees progressing to qualification.

4. HYGIENISTS

0. No hygienist

1. Part time hygienist/dentist

2. Full time hygienist/dentist

3. >1 hygienist/dentist

5. APPEARANCE

0. All personnel need attention to dress, grooming, & personal hygiene

1. Some personnel need attention to the above

2. All personnel neat and well groomed

3. All personnel of exceptionally good appearance with maybe coordinated uniform or apparel design.

6. DEMEANOUR

0. All staff unfriendly & unpleasant

1. Some staff unfriendly & unpleasant

2. All staff friendly & pleasant

3. Friendly & pleasant staff a feature of the practice

7. LONGEVITY

0. No staff employed >2 years

1. <50% of staff employed >2 years

2. >50% of staff employed >2 years

3. All staff employed >3 years

8. CPR (If dentist not trained score "0" regardless of other personnel)

0. Dentist not trained/certified

1. Only dentist trained/certified

2. At least 1 staff member + dentist trained/certified

3. All practice personnel trained /certified

9. CONTINUING EDUCATION (STAFF)

CE is vital to the health of a practice and the vitality of it's profesionals. It should be broad based across all strata of personnel

0. No member of full time staff participated in last year

1. <50% staff on CE courses in last year

2. >50% " " " " " "

3. All full time members of staff involved in CE during last year

10. CONTINUING EDUCATION (DENTIST/S)

(Meetings such as BDA sections not included. If dentist has a postgraduate qualification, P/time hospital or University appointment score a '3')

0. None in last year

1. Less than 4 sessions in last year

2. < 10 sessions in last year

3. > 10 sessions in last year

D. ADMINISTRATION

1. PATIENT RECORDS

Are the following provided for in the overall patient record format EITHER as an integral part of the notes stationery OR separately identified on a specific additional form appropriate to the purpose.

		NO	YES
a)	Medical history		
b)	Blood pressure details		
c)	Medical alert on front of notes when appropriate		
d)	Dental history		
e)	Head , neck, face soft tissues		
f)	Record dental caries		
g)	Record existing restorations		
h)	Record periodontal disease		
i)	Record TMJ/occlusion info		
j)	Treatment plan		
k)	Informed consent		
l)	Laboratory prescription forms		
m)	Referral letter copies		

2. PATIENT SUPPORT SYSTEM ADMINISTRATION

Is there a formalised system in writing for the following contingencies?

		NO	YES
a)	Patients in pain or with a problem needing urgent attention.		
b)	Medical emergency		
c)	Specialist referral		
d)	Physician referral		
e)	Telephone answer system for emergencies outside hours		
f)	Computerised records management		

3. ADMINISTRATIVE STAFF PROTOCOLS

(Are there written documents for the following:)

a) A personnel practice manual./ Vade mecum **Protocols for admin tasks etc, billing, filing, evaluating personnel, hazard limitation /health & safety compliance.**

b) Job descriptions for staff

c) Record & evaluation of training

d) Agenda/Minutes for staff meetings

e) COSSH assessments

f) Fire and emergency procedures

g) Autoclave inspection certificates

h) Accident book & First aid officer appointed.

i) Pressure vessel insurance

4. MATERIALS FOR PATIENTS

	NO	YES
a) Practice brochure/statement of practice philosophy and policies		
b) Dental health education materials		
c) Custom appointment cards		
d) Postsurgical instructions		

PART 2. PROCESS

A) PRACTICE MANAGEMENT

1. RECEPTIONIST/APPOINTMENT CONTROL

NO YES

a) Patients monitored (Is the reception area so placed that waiting patients can be viewed at all times?)

b) Cancellation call list (patients who will attend at short notice to fill cancellations)

c) Appointments confirmed (An organised protocol for confirming appts to minimise "no-shows")

d) Daily schedules
(A prepared day list for each treatment area)

2. APPOINTMENT BOOK

a) Neat & legible (could easily be read by another staff member)

b) Organised by rooms

c) Treatment procedure noted

d) Variable length appropriate appointments

e) Scheduled lunch break

f) New pt appointment within 3 weeks

g) Protocol for emergencies

h) Special hours (e.g. rota evening & lunch hour appts)

i) Recalls scheduled, list checked by dentist

3. PERSONNEL MANAGEMENT

a) Staff Meetings

0. No meetings held

1. Not scheduled but held occasionally

2. Scheduled and usually held

3. Regular weekly/morning meetings

b) In-Service Training

(Refers to formal efforts to teach,update or upgrade skills and understanding. This occurs within the practice and does NOT include continuing education activities or 'on the job' day to day type instruction.)

0. No in service training
1. Reference/instructional texts available for staff
2. Informal self regulated training
3. Formal, organised, programme

c) Infection Control Training

0. No in- service training
1. New employees trained
2. All employees trained together
3. Training repeated & updated

B. STERILISATION/INFECTION CONTROL

Summarise observations of the following:

	NO	YES
a) Autoclave sterilisation used routinely		
b) Instruments cleaned/u sonic bath before sterilisation		
c) Heavy gloves available		
d) Sterile instruments packaged		
e) Burs sterilised after each use		
f) All hand/plastic instruments sterilised		
g) Handpieces flushed 20 -30 secs after use		
h) Handpieces sterilised after use		
i) 3/1 syringe & hoses flushed 20-30 secs after use		
j) Needles/sharps disposed of in special bins		

(Sterilisation/Infection control continued)

NO YES

k) Disposables (gloves, masks, wipes, surface covers etc) discarded in sealed plastic bags.

l) Impressions disinfected

m) Gloves worn routinely for each patient

n) Gloves changed between each patient

o) Cover uniform or treatment room outfit worn by all patient care staff

p) Uniforms changed daily

q) Uniforms removed before leaving practice

r) Rubber dam used as appropriate and role in cross infection understood by team

s) Face masks routinely worn by all health care personnel

t) Sterilisation & infection control regime same for each patient

u) Bactericidal handwash

v) Paper towels

w) Headrest covers

x) Protective glasses worn by all patient care personnel

y) " " " " " patients for treatment

z) Dentist operates from tray set-up

aa) Patient care personnel HbS vaccination

bb) No food eaten in lab or sterilisation areas

cc) Are other sources of cross contamination disinfected after each patient (e.g. Light handles, unit switches & controls, drawer handles, work surfaces, suction apparatus console, chair switches etc.)

C. RADIOGRAPHIC EVALUATION

Five patients records containing representative radiography examined for:

1. ORGANISATIONAL FACTORS

   a) Frequency of radiography correct

   b) Films inc the most current neatly mounted and and identified

   c) All films dated

2. DIAGNOSTIC VALUE & TECHNIQUE

	NO	YES
a) Representation of area examined		
b) Exposure/density/contrast		
c) Angulation/ positioning vertical/horizontal		
d) Processing technique		

D. DATA COLLECTION

Eight records reviewed for:

1. ORGANISATION OF PATIENT RECORDS

   0. No organisation. (Entire record a confused mess. Everything loose and mixed up.)

   1. Poor organisation (Difficult to locate some record components Evaluation compromised)

   2. Reasonable organisation (Components available in logical order. Ready access within each record to various components)

   3. Excellent organisation (A well organised , very attractive, easy to use record. Outstanding. Top 10% of records evaluated)

2. LEGIBILITY OF RECORDS

If customised abbreviations are used they should be legibly recorded and understood by otherpersonnel in the practice.

0. Cannot read or understand (Writing so poor or abbreviations used inconsistently so that record not possible to interpret.)

1. Difficult to read & understand (Whilst possible, this is only accomplished with difficulty)

2. Some problems (Generally readable and understandable, but some parts that are difficult in terms of legibility)

3. Easily read and understood.

3. COMPLETENESS OF RECORDS

Are there areas in the records - preferably specific, where the following are recorded?

	NO	YES
a) Medical history		
b) Blood pressure		
c) Physicians name		
d) Head & neck/soft tissue exam		
e) Dental history		
f) Existing restorations		
g) Carious lesions		
h) Periodontal disease		
i) Occlusal information		
j) Treatment plan		
k) Records update (e.g. Medical history, perio disease etc)		

E. DIAGNOSIS

Eight radiographic records reviewed for:

1. CARIOUS LESIONS
(NOT to include early enamel lesions)

0. Missed >3 diagnoses

1. Missed 2 diagnoses

2. Missed 1 diagnoses

3. No diagnoses missed

2. PERIODONTAL DISEASE

0. Not mentioned or recorded

1. Mentioned, but no proper diagnosis or record

2. Briefest information & record

3. Diagnosis and full record

3. BONY PATHOLOGY (A diagnosis is considered missed if it nowhere appears in the record)

0. >3 Diagnoses missed

1. 2 Diagnoses missed

2. 1 diagnosis missed

3. No missed diagnoses

F. TREATMENT PLAN

EVALUATION OF THE FOLLOWING FOUR ELEMENTS IS BASED ON THE ORIGINAL OR PRIMARY COURSE OF TREATMENT DEVELOPED FOR THE PATIENT . EXAMINE 5 RECORDS.

1. SEQUENCE [ ]

An appropriate sequence for treatment procedures could be as follows:

Relief of pain/treatment of chief complaint. Management of acute infection. Prophylaxis.Dental Health Education/preventive services. Treatment of extensive caries, and endodontically involved teeth. Periodontal treatment. Necessary non-emergency extractions. Treat remaining caries.Replacement of teeth/ Finalise occlusion. Allocate recall schedule.

SEQUENCING SHOULD BE REGARDED AS APPROPRIATE UNLESS SERIOUS ERRORS EXIST (For example leaving major caries for treatment late in sequence or replacing teeth before periodontal therapy etc) SCORE "0" for each case as appropriate

If treatment plan is incomplete, but what is available seems correctly sequenced score Yes (5 for each case as appropriate)

2. COMPLETENESS [ ]

Remember that if the plan is reasonably complete score Yes(5) for each case). If plan is seriously incomplete (e.g. if there is obvious radiographic evidence of periodontal disease, but no mention in the treatment plan then score "0").

3. APPROPRIATENESS [ ]

It is probably difficult to make an evaluation on the basis of patient record review only. Questionable or doubtful issues should perhaps therefore be biased in favour of the dentist. Examples of obviously inappropriate treatment would be removal of caries, or periodontally/endodontically involved teeth that one would reasonably expect to save with straightforward treatment. Any single instance such as the aforementioned will be scored "0"

4. IMPLEMENTATION [ ]

Has the treatment plan been followed? Regardless of how well treatment has been planned, it is of little consequence if the plan is ignored. Despite good ratings in 1 thru 3 above a score of "0" is entered if a treatment plan is ignored.

G. TREATMENT

Observations on elements will be made via patient records and available radiographs

1. RESTORATIVE [ ]

Look at five restorations. Absence of defects that would make them be considered substandard. Visible overhangs. Open contacts. Poor contour in the approximal areas etc. Score "5" for each satisfactory record.

2. ENDODONTIC [ ]

Look at five cases. Five referrals are acceptable provided final rad. is available and notes can be seen.Score "5" for each appropriately treated case.For in-practice treated cases score "5"for every acceptable case according to the following criteria:

a) Filling within 2mm of apex of each root filled.

b) No evidence of unacceptable condensation

c) Minimal extrusion thru apex.

ALL OF THESE MUST BE SATISFIED TO SCORE. In multi rooted teeth all roots must comply.

3. PERIODONTICS [ ]

Look at five cases. Five referrals are acceptable provided records are available. The emphasis here is on the importance periodontal disease is accorded in the practice. Examine the records to confirm that treatment was rendered. Score "5" for every effectively managed case, either in-practice or referral.

4. ORAL MEDICINE

Two records of patients who have a history of either rheumatic heart disease or a condition requiring antibiotic cover should be assessed. Confirm that the patient received AB cover in an appropriate way. e.g. The antibiotic given , it's route of administration, dosage, timing , prior to what procedures etc.
If two such records cannot be provided, or if AB cover cannot be confirmed from the record score"0" If the correct procedure has been followed score " 5 " for each case.

H. PATIENT MANAGEMENT

The information entered in this section is taken entirely from the patient questionnaire
Numbers refer to question number in Patient Questionnaire

Score for Questionnaire No: 1 2 3 4 5 6 7 8

8)	Average waiting time
13-14)	Staff are friendly
19)	Dentist is friendly
21)	Dentist discusses costs
22)	Dentist explains procedures
6)	Emergencies during practice hours
5)	Appointment availability
7)	Emergencies out of hours
9)	Appointments confirmed
15)	Dentist makes treatment comfortable

PART 3. OUTCOME

A PATIENT SATISFACTION

The following information is obtained from the Patient Questionnaire. Numbers refer to patient questionnaire question numbers

Score for questionnaire No 1 2 3 4 5 6 7 8

1-4)	Practice ambiance
13-14)	Staff polite and friendly
21)	Costs explained
22)	Procedures explained
5-12)	Pt opinion of appt procedures
15-18)	Pt opinion of treatment procedures
19,20, 23,24)	Pt opinion of dentist manner & ability

B. PATIENT ORAL HYGIENE

Information from patient questionnaire. Numbers relate to questions.

Score for questionnaire No: 1 2 3 4 5 6 7 8

25) Frequency of brushing

26) Frequency of flossing

28) Pt perception of dental health

C. PATIENT DISABILITY

Score for questionnaire No: 1 2 3 4 5 6 7 8

27) Average hours lost through dental emergencies in last year.

D PATIENT RECALL

An important facet of the outcome of treatment is it's maintenance through an active recall programme. Patient recall should be scheduled according to need. For instance this may vary from a few months to maybe eighteen months, and may or may not include a parallel hygienist recall programme of interim visits as appropriate.

1. ACTIVE RECALL PATIENTS

0. No recall system
1. Fewer than 500 active patients/dentist
2. 500 - 1000 active patients/dentist
3. >1000 active patients /dentist

2. DENTIST SURVEYS RECALL LIST

To minimise error it is appropriate for the individual dentist to double check the recall list before patients are mailed to ensure that it is correct and does not contain names of patients who perhaps recently attended for a casualty visit between treatments etc.

0. Dentist/s never check recalls
1. Admin staff check recalls
2. Dentist/s sometimes check recalls
3. Dentist/s always check recalls

3. HYGIENIST PATIENT RECALL

0. No system
1. Some patients booked months ahead for review
2. Some patients on recall.
3. All patients seen by hygienist on variable recall.

APPENDIX 6

Questionnaire for interview and patient completion

KINGS COLLEGE SCHOOL OF MEDICINE & DENTISTRY
MAURICE WOHL GENERAL DENTAL PRACTICE CENTRE

GENERAL DENTAL PRACTICE PROJECT

PATIENT QUESTIONNAIRE
- a consumer view of the dental experience.

This questionnaire is for research purposes only and is completely anonymous. It cannot be related to a particular person so please be as frank as possible. When completed please fold once and place into the prepaid envelope provided, seal it and drop it into the nearest postbox . WE APPRECIATE YOUR HELP!

(Please tick the appropriate answers)

A. The practice

1.	I find the practice:	a)	Attractive & comfortable
		b)	Fairly pleasant
		c)	Unpleasant
2.	The waiting/reception area is:	a)	Comfortable
		b)	Average
		c)	Dull
3.	Access to the practice is	a)	Convenient & easy
		b)	Fairly easy
		c)	Difficult
4)	I find the dental equipment:	a)	Modern
		b)	Old fashioned
		c)	Threatening

B. Appointments.

5)	When I ask for a normal appointment for treatment, I am offered one:	a)	Soon after
		b)	Fairly soon
		c)	Too long after
6)	When in pain or having an urgent problem, I am offered an appointment:	a)	The same day
		b)	Usually the same day
		c)	Never the same day
7)	My dentist can be reached at weekends in an emergency:	a)	Yes
		b)	Sometimes
		c)	Never
8)	When I attend for treatment I am seen:	a)	On time
		b)	Usually on time
		c)	Usually late

9)	I receive appointment confirmations:	a) b) c)	Yes Sometimes Never
10)	The time allocated for my treatment is:	a) b) c)	About right Too short Too long
11)	I find the practice opening times are:	a) b) c)	About right Fairly suitable Inconvenient
12)	I think extended availability of appointment times (eg after 5 30pm , before 9am, and Saturday am) is:	a) b) c)	Very useful Fairly useful No benefit

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C. Personnel

13)	The reception staff are usually:	a) b) c)	Friendly & helpful Averagely helpful Indifferent or rude
14)	The dental surgery assistants (nurses) are usually:	a) b) c)	Caring and friendly Averagely helpful Indifferent or rude

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D. Treatment.

15)	I usually find my treatment:	a) b) c)	Fairly comfortable Not too comfortable Very uncomfortable
16)	I have received advice on Oral hygiene (toothbrushing, flossing etc) and prevention etc from my dentist or dental hygienist:	a) b) c)	Yes Sometimes Never
17)	I attend for hygienist visits on a regular basis:	a) b) c)	Yes Sometimes Never
18)	Most of my dental problems are :	a) b) c)	Treated effectively Sometimes relieved Not solved

---

E. The dentist

19) My dentist is friendly & polite :
- a) Always
- b) Sometimes
- c) Never

20) My dentist listens to what I say
- a) Always
- b) Sometimes
- c) Never

21) My dentist discusses treatment costs with me:
- a) Yes
- b) Sometimes
- c) Never

22) My dentist discusses treatment procedures with me:
- a) Yes
- b) Sometimes
- c) Never

23) I think my dentist is:
- a) Good
- b) Average
- c) Below average

24) If a close friend or relative were seeking a dentist, I would recommend my dentist:
- a) Definitely
- b) Perhaps
- c) Never

F. Results

25) How often do you brush your teeth?:
- a) More than once a day
- b) Once a day
- c) Less than once a day

26) How often do you use dental floss/tape or other aids (proxy brush etc.):
- a) More than once daily
- b) Once Daily
- c) Less than once daily

27) How much work or productive time have you lost in the last year through neccessary emergency dental visits:
- a) Less than 3 hours
- b) 3 to 6 hours
- c) More than six hours

28) I consider my dental health to be:
- a) Very good
- b) Average
- c) Below average

THANKS FOR YOUR TIME AND CONSIDERATION IN COMPLETING THIS QUESTIONNAIRE !

APPENDIX 7

Computer hardware & software

Computer equipment (hardware)

Apple Mackintosh 2Csi System 7.1 8MB ROM, 250 MB RAM.

Microtek Scanmaker II

GCC BLP Elite Laserprinter

Computer software

Claris "Macwrite" (Wordprocessing)

Microsoft "Works" (Database & spreadsheet)

Computer Associates "Cricketgraph" (Data management & Graphs)

Adobe "Photoshop" (Image manipulation)

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